Lines Across the Land

A Biography of the Linear Earthwork Landscapes of the Later Prehistoric Yorkshire Wolds

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Abstract

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Keywords: linear earthworks; boundaries; land division; Late Bronze Age; Iron Age; Yorkshire Wolds; East Yorkshire; landscape biography; landscape archaeology; GIS

During the first millennium BC, the people of the chalk landscapes of the Yorkshire Wolds began carving up their world with monumental linear earthworks. This project explores the meanings of the later prehistoric boundary systems of the Yorkshire Wolds. It writes a biography of the linear earthwork landscapes of the north-central Wolds, using geographic information systems (GIS), original fieldwork and theories of agency and memory. Tracing the construction, use and modification of particular linear earthworks, it examines how these monuments would have related to other features in the landscape, and how they could have exercised agency within networks of interconnected people, animals, objects and other places. Finally, the project attempts to situate these boundary systems within the larger context of Late Bronze Age and Iron Age society in order to understand how the later prehistoric people of East Yorkshire would have experienced their world.

Taking a biographical approach to landscape and allowing linear earthworks to become the protagonists of this narrative, the project charts the life histories of the earthworks at Wetwang-Garton Slack and Huggate Dykes and investigates the collective authorship of the wider landscape. To understand the rural, monumental landscapes of the Wolds, we must consider the agency of not only people, but also of animals and of monuments themselves. By focussing on the relationships which bound together linear earthworks and other agents, we can begin to understand the ways in which monumentalised landscapes both reflected and generated the cosmologies of prehistoric communities.

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Journey

1 Leave this place
Set off
Go adventuring
Travel

5 A to B
And in between
Paths

8 Jumbled lines
Snail slime trails

10 Move

***

Dedicated to my parents

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Chapter 1.

Linear landscapes: introduction to the boundary systems of the Yorkshire Wolds

> *A knowledge of the position and extent of old earthworks is of assistance in picturing the appearance of the neighbourhood in early times, and aids our perception of the manners and customs of the former occupants of the land.*
>
> *Mortimer 1905: 365*

The later prehistoric linear earthworks of Britain are enigmatic: few are securely dated and their purposes are contested. This project aims to understand the meanings of boundaries on the Yorkshire Wolds in later prehistory. It uses geographic information systems (GIS), agency theory, memory theory and landscape biography to explore the possible relationships that people and animals had with landscapes. The project attempts to map changes in boundary systems from the construction of linear earthworks in the Late Bronze Age to Early Iron Age, and to situate these changes within a larger geographical and temporal context.

The linear earthworks (dykes) of the Yorkshire Wolds are monumental chalk-cut ditches and earthen ramparts that stretch for kilometres across the high and low ground of the chalk hills. In many places the earthworks augment or mimic the topography around them, but other segments are elaborate and unlike the natural landforms of the Wolds. In addition to cross-ridge dykes, which span short distances, the Wolds also have extensive earthworks that run for kilometres. Long, complex earthworks exist in other parts of Britain and Ireland, with some of the best examples on Dartmoor (Fleming 2008) and in southern Scotland (Barber 1999). The linear earthworks of the Yorkshire Wolds are presumed to be Late Bronze Age to Early Iron Age in date, although most of them lack direct scientific dates. They appear to have been constructed around the same time as hillforts and other defended enclosures, so it is likely that they form part of a larger network of boundaries that exercised some form of control over the landscape. If these different types of boundaries worked together to form a single system, then the bounded spaces of the later prehistoric Wolds would have been vast. The linear earthworks could have appeared like massive hillforts carving up the land, dominating entire landscapes and channelling the movement of people and animals. This project postulates that the linear earthworks of the Yorkshire Wolds materialise memories of earlier boundaries and exercise control through various types of agency, and it attempts to trace how these boundaries shaped and were shaped by later prehistoric societies.

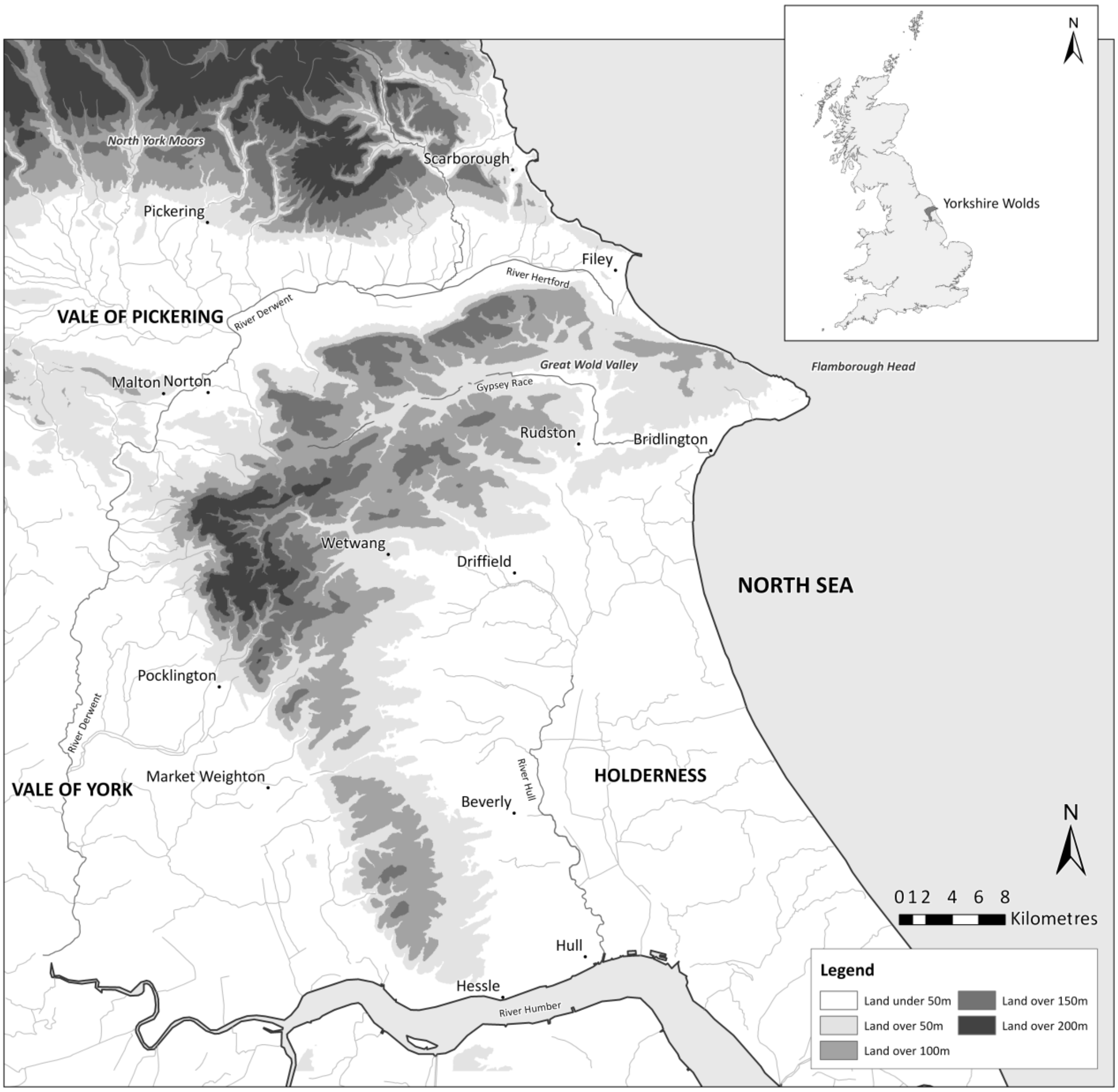
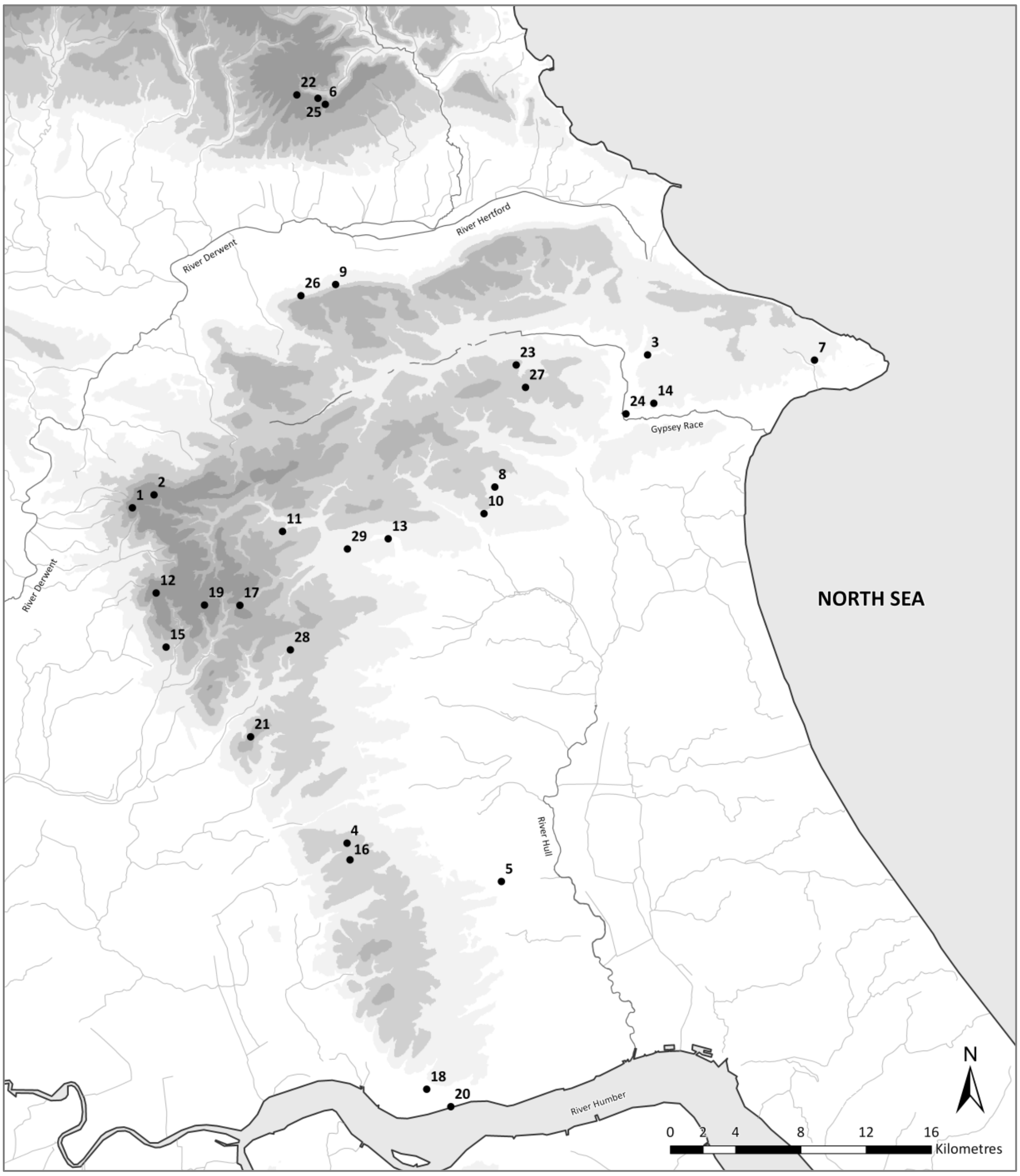


Fig 1.1 Area of study
The Yorkshire Wolds are a crescent-shaped ridge of chalk located in the East Riding of Yorkshire. The map highlights major landforms and modern centres of population, some of which have later prehistoric beginnings. Contains Ordnance Survey data © Crown copyright.



1 Acklam Wold; **2** Aldro; **3** Argam Dykes; **4** Arras; **5** Beverly; **6** Cockmoor Dykes; **7** Dane's Dyke; **8** Dane's Graves; **9** Devil's Hill; **10** Driffield Wold; **11** Fimber; **12** Garrowby Wold; **13** Garton Slack; **14** Greenlands; **15** Grimthorpe; **16** Hesselskew; **17** Huggate Dykes; **18** Melton; **19** Millington; **20** North Ferriby; **21** Nunburnholme Wold; **22** Oxmoor Dykes; **23** Paddock Hill; **24** Rudston; **25** Scamridge Dykes; **26** Staple Howe; **27** Swaythorpe; **28** Warter; **29** Wetwang Slack.

Fig 1.2 Sites mentioned in Chapter 1
Contains Ordnance Survey data © Crown copyright.

1.1 Area of study: the Yorkshire Wolds

The Yorkshire Wolds are a crescent-shaped area of chalk hills in East Yorkshire (Fig 1.1), surrounded by the lowlands of Holderness to the east, the Vale of York to the west and the Vale of Pickering to the north. The chalk stretches from the Humber Estuary in the south, towards the River Derwent in the west, and over to Flamborough Head in the north-east. The western and northern scarp edges of the Wolds are steep and dramatic, whereas the eastern edge gently fades into the lowlands. Dry valleys called slacks carve up the chalk uplands, which at their highest reach 250m above ordnance datum. The Yorkshire Wolds are surrounded by other areas of chalk and limestone uplands. The north-western corner is separated from Howardian Hills by the River Derwent. Across the Vale of Pickering are the North York Moors, and to the south of the Humber are the Lincolnshire Wolds; linear earthworks have been found in both of these regions (e.g. Spratt 1993, Boutwood 1998).

Today the Wolds are sparsely populated, the land being largely open and primarily dedicated to arable farming. In the nineteenth century cereal cultivation was intensified and by the turn of the twentieth century many archaeological features that had once survived above ground had been razed by the plough (Mortimer 1905: 368-369). Historically, mixed agriculture based on sheep farming and communal or open fields dominated the region (see Section 3.1.2). Sheep are well suited to the Wolds, as they require less water than other livestock. At present there is only one permanent stream, the Gypsey Race, on the crest of chalk crescent in the Great Wold Valley, and its exact course varies from year to year. Small, seasonal streams and springs can be found at the edges of the Wolds. Neal (2010: 3, 12) cautions against assuming too much about the hydrology of the Wolds in the past, though; she notes that in the past, people created surface water on the Wolds through the construction of dams and ponds, and that the chalk aquifer of the Wolds is not static. If the fresh water supply available on the Wolds during later prehistory were similar to that of the modern era, then the general lack of water could have undoubtedly shaped the ways in which prehistoric people interacted with this landscape.

This project explores the linear earthworks of the Yorkshire Wolds by using nested scales of analysis (macro-, meso- and micro-scale) and a biographical approach to landscape (see Chapters 2-3). A GIS facilitates movement from one scale to another, and targeted fieldwork complements archival and computer-based work at the micro-scale. Macro-scale mapping of all known linear earthworks on the Wolds was completed by the Royal

Commission on the Historical Monuments of England (Stoertz 1997). This project begins by zooming in slightly to the meso-scale, focussing on the north-central Wolds (Chapter 4). It follows a particular linear earthwork through space and time, in an attempt to piece together the life history of the monument. The earthwork and its many ‘tributaries’ are traced from Huggate in the west to Garton-on-the-Wolds in the east. Case studies of segments along the earthwork—Wetwang-Garton Slack (Chapter 5) and Huggate Dykes (Chapter 6)—are selected for analysis at the micro-scale. The project then moves back out to the macro-scale to consider the earthwork in the contexts of the rest of the Wolds and Britain at large (Chapters 6-7).

1.2 Research questions

In order to understand the later prehistoric landscapes of the Yorkshire Wolds, this project poses the following questions:

1. What patterns characterise the biographies or life histories of the linear earthworks of the Yorkshire Wolds?
    a. *Birth:* How and why did the bounded landscapes of Wetwang-Garton Slack and Huggate Dykes develop where they did?
    b. *Life:* When were the linear earthworks at Wetwang-Garton Slack and Huggate Dykes established, and for how long were they maintained?
    c. *Death:* Were the linear earthworks of the Yorkshire Wolds ever truly abandoned, or were the majority reinterpreted and reused? In other words, did they die?
2. How would the biographies of linear earthworks have been connected with those of people, animals, objects and other places?
    a. How and why did people create boundaries on the Yorkshire Wolds?
    b. How did later prehistoric people interact with older boundaries and monuments from earlier prehistory?
    c. Did people give the land agency? Could the landscape act upon people?

d. How did the boundary systems of the Yorkshire Wolds fit into the wider later prehistoric world? How did linear earthworks create and reflect later prehistoric cosmologies?

1.3 Aims and objectives

This project aims to explore the biographies of linear earthworks on the Yorkshire Wolds, and to understand changing meanings of boundaries from later prehistory onwards. To achieve these aims, the project has the following objectives:

1. To develop models for the agency of landscape and landscape biography. – Chapters 2 and 7
2. To synthesise and review data relating to the later prehistoric boundary systems of the Yorkshire Wolds from a range of sources (e.g. aerial photography, excavation archives, human geography). – Chapters 3-4
3. To construct a geographic information system (GIS) with which to analyse and visualise the data. – Chapter 4
4. To chart the construction and maintenance of the earthworks running from Huggate to Garton-on-the-Wolds (Line A), focussing on two case study sites (Wetwang-Garton Slack and Huggate Dykes). – Chapters 4-6
5. To write the life histories of Wetwang-Garton Slack and Huggate Dykes, identifying their births, lives and deaths. – Chapters 5-6
6. To model patterns of movement around Wetwang-Garton Slack and Huggate Dykes. – Chapter 6
7. To trace connections amongst the earthworks at Wetwang-Garton Slack and Huggate Dykes and other agents, and to contextualise these connections within later prehistoric society and cosmology. – Chapters 6-7

1.4 East Yorkshire in context

Studies of the Late Bronze Age (c. 1000-800 BC) and Iron Age (c. 800 BC-AD 400) of East Yorkshire (e.g. Challis and Harding 1975; Bevan 1997;

Giles 2000, 2007 and 2012; Mackay 2003; Fenton-Thomas 2003 and 2005; Halkon 2008 and 2013; Dent 2010) are part of the well-established scholarship on British and Irish later prehistory (e.g. Clark 1940; Cunliffe 1974; Bradley 2007; Sharples 2010). This era of prehistory saw changes in land organisation, material culture and funerary practices, all with social, political, economic and cosmological implications. Although it was largely funerary remains that captivated the attention of antiquarians and early archaeologists, studies of the wider landscape are not new. This project builds upon maps, surveys and excavations from the nineteenth and twentieth centuries, the most important of which are outlined here.

1.4.1 The archaeology of later prehistoric East Yorkshire: a brief overview

Perhaps the most recognised characteristic of later prehistoric East Yorkshire is its Iron Age square barrow burial tradition, which is notable for its chariot burials (Fig 1.3) and because it occurred at a time when formal burial does not seem to have been the norm for the rest of Britain. Disarticulated human remains have been found in domestic and non-domestic contexts across later prehistoric Britain (e.g. Cunliffe 1992; Shapland and Armit 2012), and bodies—in particular, heads—were imbued with complex meanings and utilised by Iron Age communities throughout Europe (Armit 2012). Across much of Britain, cemeteries appeared later in the Iron Age and were sporadic (Cunliffe 1992). In Yorkshire there was a tradition of square barrow cemeteries with parallels in northern France and the Rhineland (e.g. Stead 1965, 1979 and 1991; Jay et al. 2012), setting this region apart and suggesting that society here was in some ways different to those of its neighbours. The ‘tribe’ or group of communities that inhabited East Yorkshire have traditionally been identified as the Parisi, based on Ptolemy’s map of Britain, and they may have been related to the people who gave their name to the city of Paris (Hawkes 1959; Ramm 1978; Halkon 1989, 1998 and 2013).

The discoveries made at Arras gave rise to the belief in what was later termed the ‘Arras culture’: people with strong, if not direct, links to the Continent (Stead 1965; Stead 1979). These labels are rooted in a culture-historical approach to archaeology and further work on prehistoric communities must attempt to move towards ‘detribalising’ the past (Moore 2011), although the value of Classical sources cannot be ignored. Any connections drawn between the archaeology of East Yorkshire and evidence from the Continent (e.g. Anthoons 2010), whether archaeological or literary, should be evaluated critically (for a more extensive discussion of migrations, see Anthony 1990). Whilst the square barrows of East Yorkshire have Continental parallels, they are not identical. The chariots in burials found in East Yorkshire have been dismantled, whereas their counterparts in North and West Yorkshire, Midlothian and France are typically buried intact (Jay et al. 2012). Additionally, a recent analysis of the chariot burials at Wetwang-Garton Slack has suggested that these post-date the heyday of Continental chariot burials by about 200 years (Jay et al. 2012); this highlights the complex nature of the contact or migration between East Yorkshire and mainland Europe that occurred in later prehistory.

a **b**

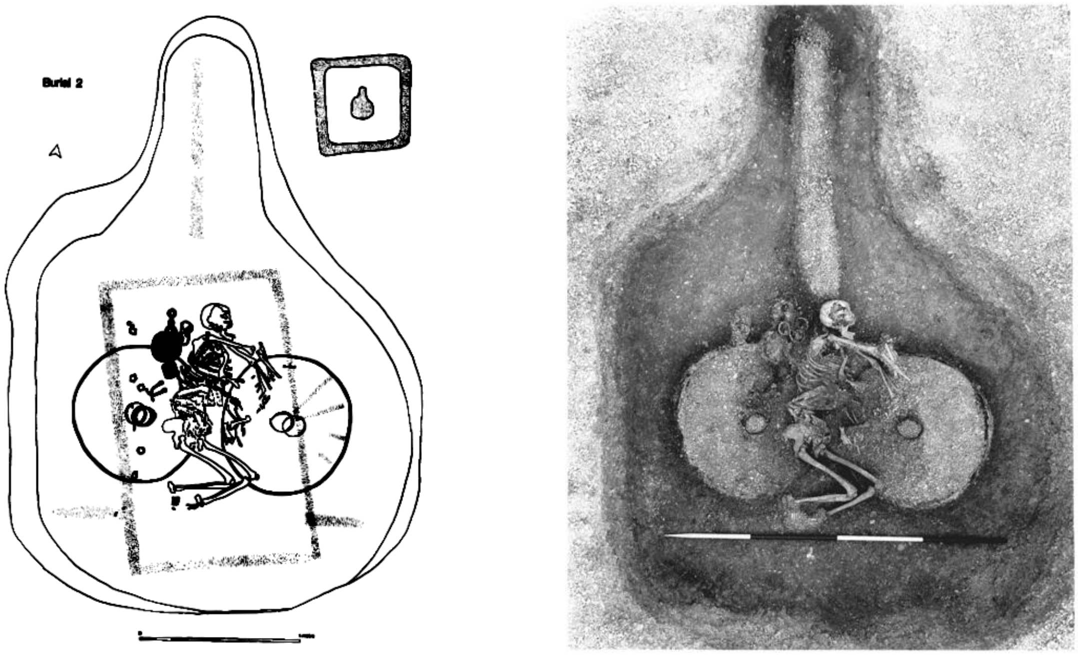


Fig 1.3 Chariot burial from Wetwang Slack
Plan (a) and photograph (b) of Burial 2 from the 1984 excavation at Wetwang Slack. The top right corner of the plan (a) shows the chariot's position within a square barrow. (Source: Dent 1985: Fig. 3 and Plate XX)

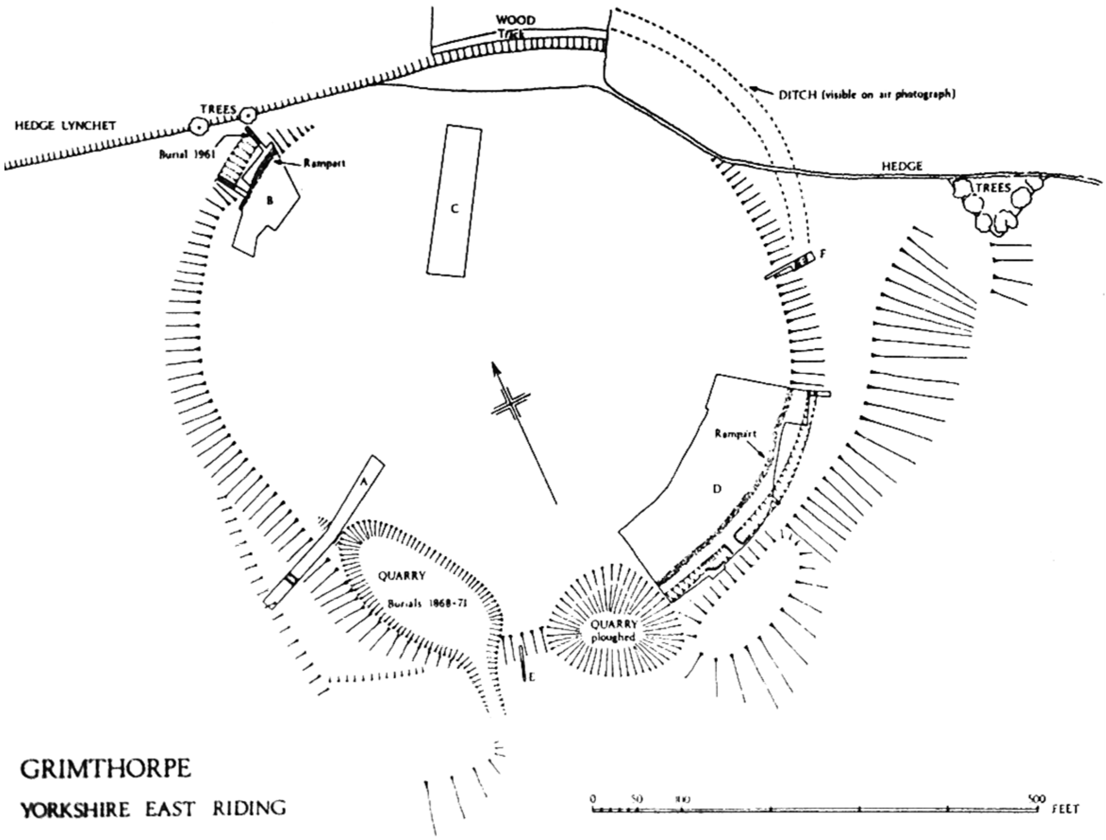


Fig 1.4 Plan of Grimthorpe hillfort
(Source: Stead 1968: Fig. 2)

The ways in which people organised the land of the Yorkshire Wolds changed throughout the first millennia BC/AD. During the Late Bronze Age and Early Iron Age settlements were both enclosed and unenclosed; there was then a shift to open settlement in the Middle Iron Age, followed by a pattern of enclosure at ‘ladder’ or ‘drove-way settlements’ in the Late (Pre-Roman) Iron Age to Roman Iron Age (Bevan 1997; Stoertz 1997; Dent 2010). In the Late Bronze Age to Early Iron Age, communities throughout Britain and Ireland began constructing hillforts and other large enclosures, which would have altered the ways in which certain landscapes were experienced. Excavation and aerial photography in East Yorkshire have revealed the presence of enclosures of various sizes, of which hillforts are the largest. These hillforts would have played a role in the social and political organisation of communities, and, among various other things, they could be indicative of warfare (Armit 2007 and 2011). At present, Grimthorpe (Fig 1.4; Stead 1968) is the only excavated hillfort on the Wolds. The site was first investigated by the antiquarian John Robert Mortimer (1905) for burials in the southwest portion of its interior, and it was excavated again after it was rediscovered by aerial photography in 1958 (Stead 1968: 149-150). The hillfort has been dated by radiocarbon and metalwork: animal bone from the enclosure ditch's fills produced two radiocarbon dates (Stead 1968: 190; Callow and Hassall 1969: 133) of 1423-833 cal BC (95.4%, 2920+/-130 BP, NPL-137, OxCal 4.2.4 and IntCal 13; Bronk Ramsey 2009; Reimer et al. 2013) and 1107-409 cal BC (95.4%, 2640+/-130 BP, NPL-136, OxCal 4.2.4 and IntCal 13; Bronk Ramsey 2009; Reimer et al. 2013), and grave goods from one of the burials dug by Mortimer suggest a La Tène phase of activity (Stead 1968: 166-178). Aerial photography has revealed two further hillfort-sized enclosures near Rudston at Swaythorpe and Caythorpe (Greenlands), and although neither has yet been excavated, Caythorpe has been surveyed (Stoertz 1997: 49; Dent 2010: 17-18). Three large enclosures not traditionally classified as hillforts have been excavated: Staple Howe (Brewster 1963); Paddock Hill, Thwing (Manby 1988); and Devil's Hill, Heslerton (Stephens 1986). Other large enclosures have been identified through aerial photography at Wetwang, Warter and Driffield Wold (Stoertz 1997: 46-49, Fig. 24). On Driffield Wold, an oval enclosure is situated between two linear features, which seem to join up with the enclosure ditch (Stoertz 1997: 47, Fig. 24:4 and 33). If the two features are of the same date, or if one had been visible in the landscape when the other was constructed, then that would suggest a close relationship between enclosures and larger boundaries cutting across the land.

The functions and meanings of hillforts and large enclosures are contested (see Armit 2007), and interpretations of the East Yorkshire enclosures range from community settlements (e.g. Stead 1968; Giles 2007) to central places for the elite (e.g. Bevan 1997). Bevan (1997: 190) argues that these sites are part of a landscape of 'contrasting open and enclosed settlements' and that they would have 'been appropriated by higher status groups within settlement communities'. According to this model, enclosure would have been a sign of power, including some whilst expressly excluding others. Giles (2007: 109) adopts a different view and emphasises movement in the landscape *between* open settlements and hillforts, arguing that they could have been seasonally occupied or used by the same community for different tasks. Such tasks could have been related to the pastoral lifestyle that seems to have characterised the later prehistoric Wolds. Giles' (2007) emphasis on movement through the landscape for different tasks or occasions provides a helpful model for understanding enclosures, and it is likely that enclosures represent a complex relationship between communities and the land. In addition to having practical, symbolic and potentially political meanings, hillforts and other enclosures were bounded places that would have been part of larger systems of land organisation, and they must be studied in the context of the linear earthworks around them.

Social and political change at this point in prehistory can also be seen in the emergence and control of new forms of material culture, which would have been deeply rooted in places, both distant and close to home. As in Continental Europe, the later prehistoric metalwork of Britain and Ireland includes objects of the Hallstatt and La Tène traditions (e.g. Stead 1965, 1979 and 1996; Gerloff 2004). These objects and the ideas that inspired them belonged to a vast network of exchange in which waterways must have played a crucial role. Water seems to have held a special significance for the later prehistoric people of Europe; people and things of (presumed) great value were deposited in watery places (Bradley 1998, 2005).[1] The general lack of water on the Yorkshire Wolds raises questions about local beliefs and values, and the role of water in the creation and use of linear boundaries on the Wolds will be explored as this project progresses.

1.4.2 Overcoming 'Greenwell-Mortimer syndrome': antiquarianism and early archaeology in East Yorkshire

In the early 18th and 19th centuries, antiquarians began exploring the archaeology of East Yorkshire. They focused on the excavation of barrows and were largely interested in grave goods. The earliest documented antiquarian opening of a barrow was in 1721 at Dane's Graves, a site mentioned as early as 1534-1543 (Mortimer 1897: 286-287; Greenwell 1906: 254, note a; Stead 1979: 16). Whilst out riding and Beating the Bounds

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[1] Structured or intentional deposition was not limited to watery places and continued after the Iron Age; for a discussion of later prehistoric and Romano-British depositional practices in Yorkshire, as well as the challenges of defining different types of deposition, see Chadwick (2012). For more on structured deposition in the Iron Age from a biographical perspective, see Büster (2012: 327-329, 342-343).

(Mortimer 1897: 286-287; see also Giles 2012: 40-41 and Section 7.1.2), a group of gentlemen dug into the barrow out of curiosity and discovered human bones. As antiquarianism became formalised in the nineteenth century and excavations became more methodical, groups like the Yorkshire Antiquarian Club began to investigate sites such as Dane's Graves and Arras (Stead 1979: 8-10, 16). A picture of the Iron Age in eastern Yorkshire emerged, largely informed by metalwork and chariot burials discovered during the excavations of square barrows.

Perhaps the best-known antiquarians from this region are John Robert Mortimer and Canon William Greenwell, both of whom concentrated on barrows and published their work around the turn of the twentieth century (Greenwell 1877; Mortimer 1905; Greenwell 1906). Whilst Mortimer was critical of Greenwell's excavation methods, their work converged when they jointly excavated Dane's Graves in 1897-1898 (Mortimer 1905: 163, 359; Stead 1979: 16-17, Pl. 3a). As a result of such excavations, Mortimer (1905: lii-liii) believed that the prehistoric inhabitants of the Wolds would have had far-reaching contacts and extensive networks of exchange dating back to the Bronze Age or earlier; these networks could be seen in the quality and sources of the grave goods found in barrows. He hypothesised that emigrants from the Continent arrived in Yorkshire during the Iron Age, bringing with them the iron technology that had been identified in the small (square) barrows at Grimthorpe, Danes' Graves, Arras, Hesselskew and Beverly (Mortimer 1905: lxxxi). The interpretations of both Mortimer and Greenwell were formed within a paradigm that valued material culture and craniology. Mortimer was particularly interested in the excavation and curation of human bones, especially crania; to explain this fixation, Giles (2006: 295-299) points to his belief in cultural evolution, which he linked to cranial morphology. Greenwell shared this cultural evolutionary paradigm, demonstrated by the nearly 200 pages of his monograph *British barrows* that are devoted to Dr G. Rolleston's work on skulls (Rolleston 1877a, 1877b). In the views of these antiquarians, the prehistory of East Yorkshire was characterised by groups of people at different stages of cultural evolution competing for the land, although the nature of this competition—friendly trade or invasion—was hotly debated.

As antiquarianism morphed into archaeology in the early twentieth century, the Late Bronze and Iron Ages of East Yorkshire were still largely understood in terms of their material culture, and burials were still the preferred targets for excavation. Wright (1990: 76) calls this bias towards funerary monuments the 'Greenwell-Mortimer syndrome' and argues that it was fostered by the relocation and display of Mortimer's personal collection to Hull in 1929, which brought funerary material to the public. As late as the early 1930s there were no excavated settlement sites on the Wolds and any knowledge of later prehistoric life was based on 'Celtic fields' found elsewhere in Yorkshire (e.g. Elgee and Elgee 1933:113-115). As academic agendas—particularly those of the faculty of Hull University College—became more important after 1930, the number of excavations in East Yorkshire increased; emphasis was still placed on material finds from sites, especially in the absence of structures (Wright 1990: 77-78). Developments in the later prehistoric archaeology of East Yorkshire from the late 1930s through the 1950s included excavations of log-boats, such as the examples at North Ferriby (Wright and Wright 1947; McGrail 1990: 120-123), which suggested that the prehistoric people the region engaged in riverine and estuarine travel. The application of radiocarbon dating to archaeology in the 1950s revolutionised the dating of sites and artefacts (Wright 1990: 81); radiocarbon dates for the North Ferriby boats suggested that they were constructed in the second millennium BC (McGrail 1990: 121). The 1950s also saw the professionalization of archaeological excavations led by the Ministry of Works, and new methods of investigation were employed to locate archaeology, with aerial photography being one of the most prolific. In the 1930s, aerial photography was seen as a potential method of identifying later prehistoric settlement in the region (Elgee and Elgee 1933: 116), which was still poorly understood, and by the 1950s it was being used to identify sites, as at Grimthorpe (Stead 1968).

The archaeological research conducted in East Yorkshire during the mid- to late-twentieth century was dominated by rescue excavations ahead of development projects, such as quarries, and in response to intensive agriculture. A broad survey of Humberside's archaeology was published by Loughlin and Miller (1979), and a seminal report by the Royal Commission on the Historical Monuments of England (Stoertz 1997) used aerial photography to characterise and interpret the landscapes of the prehistoric and early historic Wolds.

A key site excavated in the later part of the twentieth century is the multi-phased settlement and cemetery complex at Wetwang-Garton Slack (Brewster 1971 and 1980; Dent 1982, 1983, 1984, 1985 and 2010; Jay et al. 2012; see Chapter 5). First excavated by Mortimer for its Early Bronze Age barrows (1905: 208-270), it was investigated again ahead of a quarry by Grantham and Grantham in 1964; more formal excavations began in 1965 under the direction of Brewster and were concluded by Dent in 1980. Both unenclosed earlier Iron Age settlement and Late Iron Age to Roman Iron Age ladder settlement enclosures were discovered alongside a linear earthwork-trackway, spanning the parish boundary between Wetwang Slack and Garton Slack. Over 400 Iron Age graves were excavated and a chariot or cart burial was found on the Garton Slack side of the site. Three further chariot burials were discovered to the west of the original site in 1984 (Dent 1985) and in 2001 work by Hill (2002) revealed yet another chariot burial close to the site in the village of Wetwang. A recent study by Jay et al. (2012) used Bayesian modelling to analyse radiocarbon dates from the chariot burials at Wetwang-Garton Slack and neighbouring sites, and the authors conclude that the Wetwang-Garton chariot burials date to a period of around 150 years from the third to second centuries BC. Currently, the Wetwang/Garton Slack Archive Project at the University of Bradford (directed by Ian Armit and managed by Rachael Kershaw; School of Life Sciences 2011) is reassessing the excavation archives of both Brewster and Dent. This PhD has worked in conjunction with the Phase 1 of the project in order to examine the landscape in which the site was situated.

1.4.3 Bounding the land

The later prehistoric boundary systems of the Yorkshire Wolds are characterised by, but not limited to: linear earthworks, with ditches and varying degrees of multivallation; enclosures, including hillforts, smaller circular enclosures and ladder settlements; pit alignments; hollow-ways or trackways; and field systems. Linear earthworks have been found elsewhere in Yorkshire

(Spratt 1993: 128-141), as well as in other parts of Britain (e.g. Lincolnshire: Boutwood 1998; North Yorkshire: Haselgrove et al. 1990, Welfare et al 1990, Haselgrove et al. 1990; Dartmoor: Fleming 2008: 15, 70; Gloucestershire: Moore 2012; Sussex: Pitts 2010, Garland 2014; Wessex: Bradley et al. 1994, Llobera 1996, Tullett 2010) and in Ireland (e.g. Co. Armagh: Lynn 1991-92, Hurl and McSparron 2004; Co. Donegal: O Donnchada and Lynch 2005; Co. Monaghan: Walsh 1987; Co. Roscommon: Condit and Buckley 1989). As early as the eighteenth and nineteenth centuries, antiquarians were recording and interpreting the linear earthwork systems of the Wolds (e.g. Burton 1747; Pitt Rivers 1882 and Fig. 1.5; Cole 1888; Mortimer 1905; see Section 6.2). Archaeological sites were—to varying degrees—recorded on early Ordnance Survey maps (for a history of archaeology and the early Ordnance Survey, see Seymour 1980: 63-65, 173-175, 237-240). Linear earthworks appear on the First Series Six Inch to a Mile and Inch to a Mile Ordnance Survey maps of the north-central Yorkshire Wolds (Fig 1.6; see also Section 6.3.1), typically labelled as ‘entrenchments’. The First Edition Six Inch OS map forms the background for Mortimer’s later work on the earthworks around Fimber (Fig 1.7; Mortimer 1905: 378 and foldout map at front of volume); Mortimer depicts earthworks already identified by the Ordnance Survey in black and new earthworks in red (Mortimer 1905: 378).

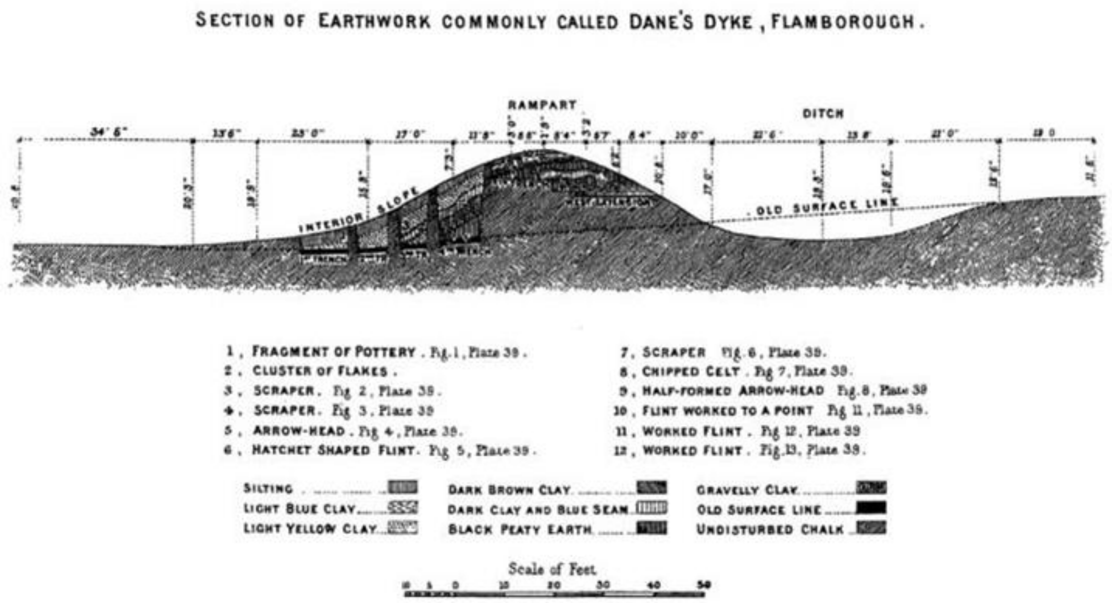


Fig 1.5 Pitt Rivers’ excavation at Dane’s Dyke on the Yorkshire Wolds
(Source: Pitt Rivers 1882: Pl. XXXVIII.)

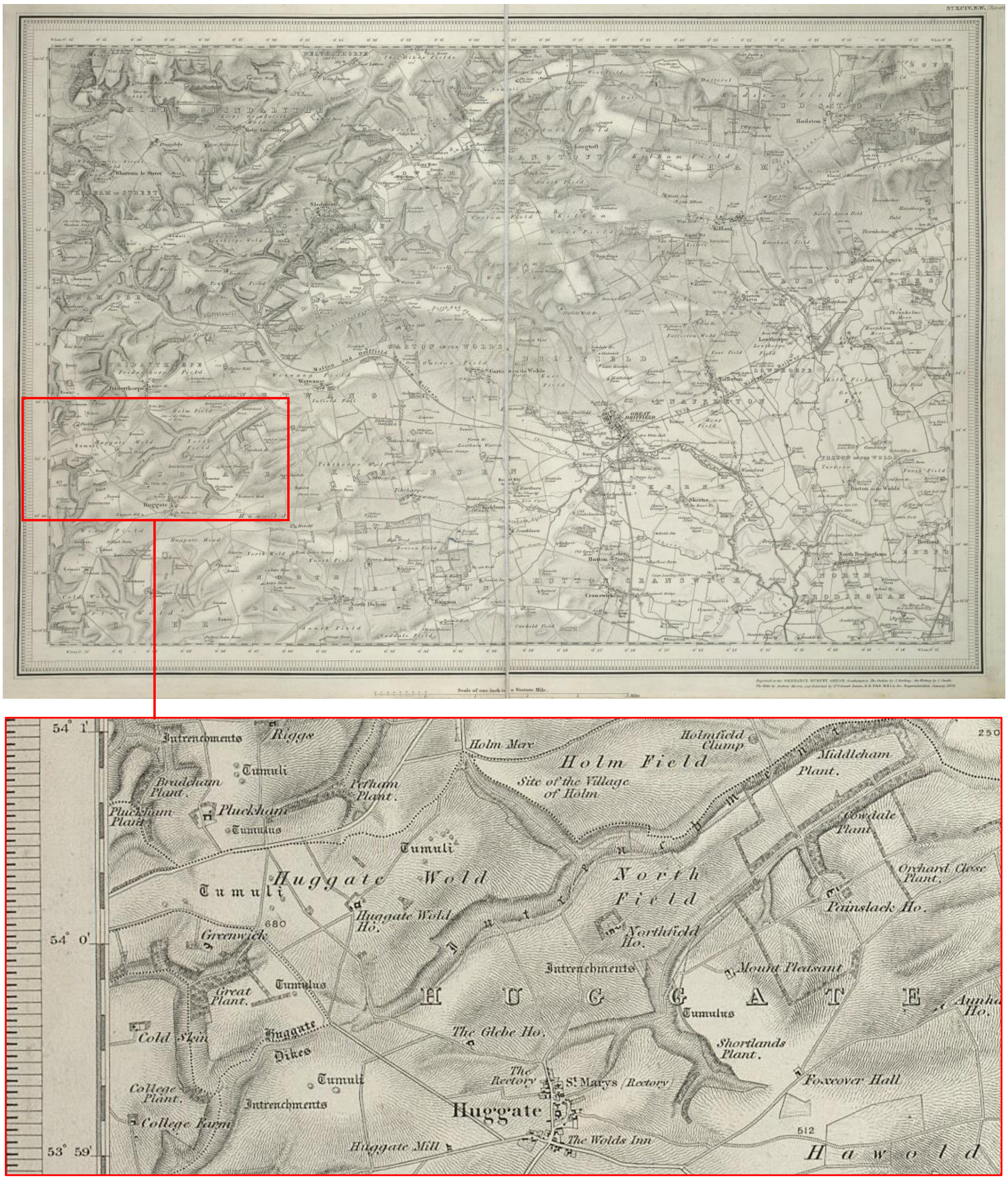


Fig 1.6 Earthworks around Huggate mapped by Ordnance Survey Inch to Mile First Series

Earthworks are marked 'Intrenchments' or labelled with place-names, as at Huggate Dykes (spelled 'Dikes'). (Source: Ordnance Survey Inch to Mile First Series, 1858: Sheet 94NW Beverly, courtesy of *A Vision of Britain*. This work is based on data provided through www.VisionofBritain.org.uk and uses historical material which is copyright of the Great Britain Historical GIS Project and the University of Portsmouth © 2004-2015)

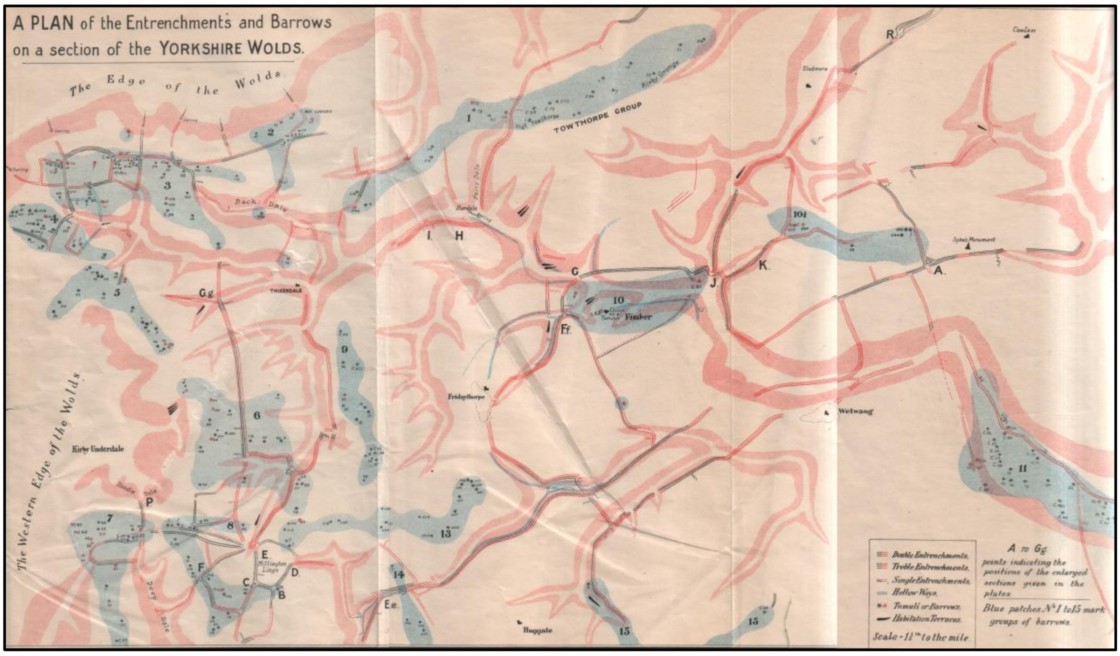


Fig 1.7 Mortimer's map of the Central Wolds
Earthworks and barrows already mapped by the Ordnance Survey are marked in black. (Source: Mortimer 1905: foldout map at front of volume)

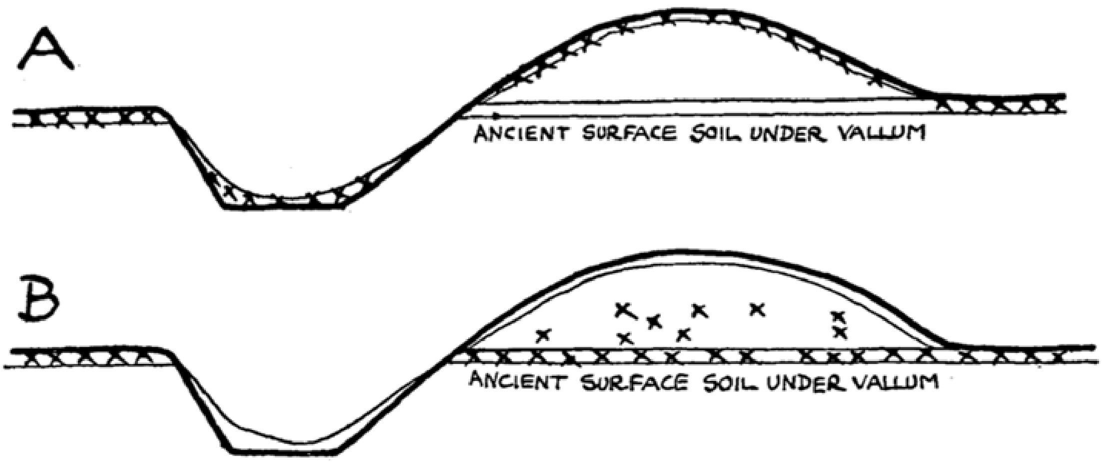


FIG. 12. DIAGRAM SHOWING THE THEORETICAL POSITION OF ROMAN OBJECTS [SHOWN BY XXX] IN RELATION TO (A) A PRE-ROMAN EARTHWORK, AND (B) A LATER EARTHWORK

Fig 1.8 Fox's method for dating linear earthworks
(Source: Fox 1929: Fig. 12.)

While prehistorians of the nineteenth and early twentieth centuries generally understood the past in terms of burials and artefacts, which they could sort into typologies and assemblages, the linear earthworks of the Yorkshire Wolds posed more of a problem because they lacked dateable material (e.g. Mortimer 1905: 365-380; Elgee and Elgee 1933: 228-236). Fox (1929: 147-148 and Fig. 12) reasoned that stratigraphic relationships between artefacts and soil horizons could date earthworks (Fig 1.8). The examples that he investigated range from what are now known to be prehistoric cross-ridge dykes to Early Medieval earthworks, such as Offa's Dyke on the Welsh border. Fox's dating technique and reliance on Classical sources, however, led him to incorrectly assert that 'practically the whole of our native dyke systems, large and small, belong to one period, and that [is] the Dark Ages' (Fox 1929: 150). As with Fox's earthworks in the west and south of Britain, basic stratigraphy could not solve the problem of chronology on the Yorkshire Wolds. Despite not knowing when the earthworks on the Wolds were constructed—or perhaps fuelled by this uncertainty—antiquarians and early archaeologists offered various interpretations of meaning and function (Elgee and Elgee 1933: 230). Mortimer (1905: 379) observed that the linear earthworks of the Wolds post-dated the Bronze Age barrows close to which they were found; at fourteen sites where both an 'entrenchment' and a barrow were present, the barrows were always cut by the 'entrenchments', sometimes unceremoniously. He reasoned that the earthworks were pre-Roman because Roman roads and monuments seemed to respect them, with Roman roads crossing the earthworks in places (ibid.: 379). Thus, if the earthworks were post-Bronze Age and pre-Roman, then Mortimer believed they had to be Iron Age.

In his volume *Forty years' researches in British and Saxon burial mounds of East Yorkshire*, Mortimer (ibid.: 365-385) describes East Yorkshire's linear earthworks and hollow-ways in great detail. As well as surveying and drawing these earthworks, he excavated some (e.g. around Aldro; ibid.: 60-61) and attempted to situate them within the larger chronology of British prehistory. Mortimer (ibid.: 369-370) concludes that the linear earthworks of the Wolds could be characterised in the following ways:

- There are three to four main lines of dykes, each with two to four (or more) banks. They are generally orientated E-W.
- Single, double and triple dykes connect the main lines and/or run down to watery places off the edges of the Wolds.
- Dykes are generally found on high ground. They may occur at the narrow sides of valleys, where they split in such a way that one portion of the dyke stays up on the high ground and another portion descends into the valley.

- Along the main lines are enclosures of various forms (e.g. at Fimber, Aldro, Millington Wold).

Mortimer believes the earthworks and enclosures to be part of one system. He suggests that they were used together to form lines of communication and routes for driving cattle, with the enclosures acting as stopping-off points for the animals (ibid.: 376).

Although the antiquarians' interpretations differed slightly, they consistently argued that the dykes were defensive in nature, even if that was not their only function. Pitt Rivers, for example, argues that Dane's Dyke (Fig 1.5), Argam Dykes and Scamridge Dykes were the work of invaders who landed at Flamborough Head and worked their way inland (Pitt Rivers 1882; Mortimer 1905: 367; Elgee and Elgee 1933: 230). Mortimer essentially agrees with the view that the dykes were practical for defence, but disagrees with Pitt Rivers over why and by whom they were constructed (Mortimer 1905: 377). He proposes that some of the earthworks may have served as an elaborate means of escape and concealment, providing cover for those who travelled through exposed places, such as to the north of the Wolds (ibid.: 372), and he argues that Danes' Dyke was an isolated and probably late example of a promontory fortification. Mortimer writes:

> 'I… believe them to be the works of a numerous settled people who had, for some short time at least, possessed the district. To make this district more secure, they found it necessary to construct these vast entrenchments, as a protection to themselves and to their cattle; probably more against the sudden incursions of freebooters, than against a conquering foe.'
>
> (Mortimer 1905: 377.)

He argues that the earthworks would have been family and tribal boundaries, and that the enclosures formed by some of them would have been 'admirably adapted for keeping cattle' (ibid.: 377). Indeed, Mortimer is not the only person to have interpreted linear earthworks as prehistoric tribal boundaries or cattle barriers; his contemporaries argue the same (Tait 1888: 89; Greenwell [publication unknown], cited in Elgee and Elgee 1933: 230).

Interpretations of the Yorkshire Wolds linear earthworks became more diversified throughout the twentieth century, although they still emphasised defence and animal management. Elgee and Elgee (1933: 230-231, citing Armitage and Montgomery 1912) argue that the earthworks were of Anglian origin and that they were used for hunting wild game, an explanation that does not match up with the archaeological record, which shows little evidence for the exploitation of wild resources at this time. Sheppard (1922: 186-189) states that the earthworks, including Danes' Dyke, were constructed around 1000 BC by a group of people moving westward from the coast. He regards Danes' Dyke in particular as being defensive:

> 'The space between the north end of the earthwork and the cliff edge, as well as one or two breaks in the ridge, are evidently intentional and part of the original scheme. By means of these, men and cattle could readily enter the enclosure in troublous times, and doubtless these small openings would be subsequently effectively barriered.'
>
> (Sheppard 1922: 186-188.)

He concludes that the amount of labour required to build such a monument would have been 'stupendous' and that the region must have been 'thickly populated' (ibid.: 188). Finally, Sheppard (ibid.: 189) notes that the earthworks 'protected' the escarpments that bound the north, south and west edges of the Wolds, as well as freshwater springs. Thus, he believes the earthworks could have been important in controlling access to water.

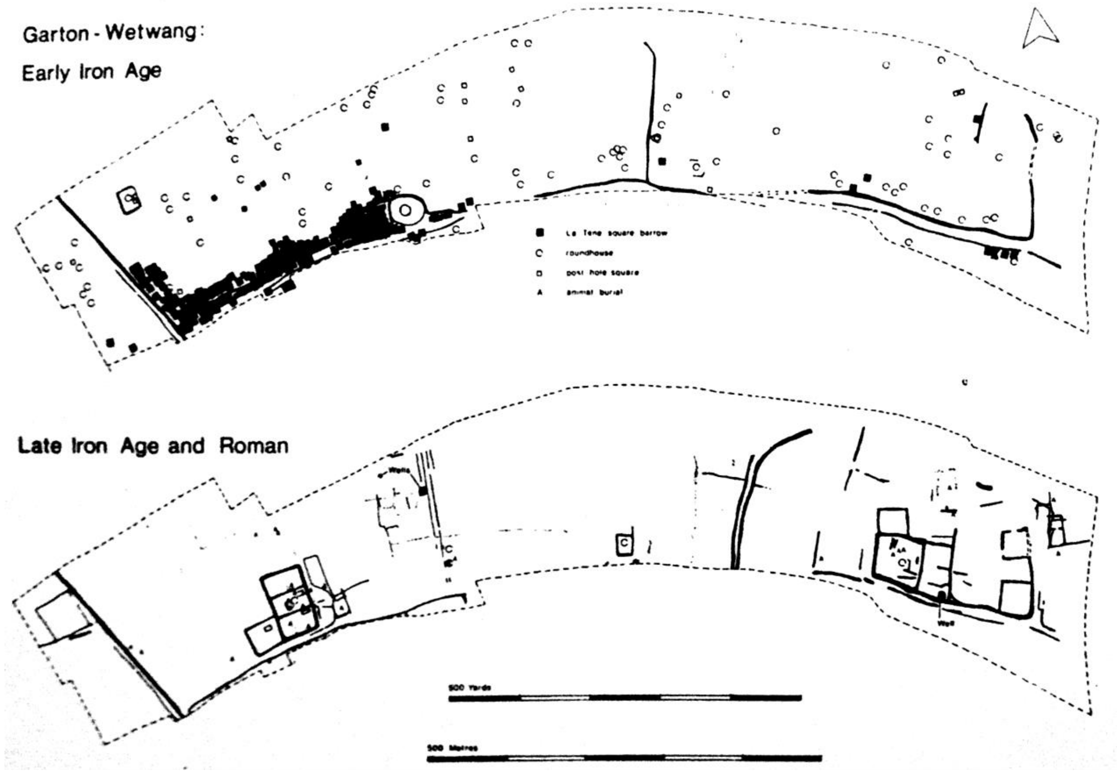


Fig 1.9 Dent’s interpretation of settlement phasing at Wetwang-Garton Slack
(Source: Dent 1983: Fig. 3)

More recent studies (e.g. Stoertz 1997; Halkon 2008; Dent 2010) have sought to record and map them, but the chronology and phasing of these boundaries are still problematic, since few are scientifically dated. Some linear earthworks became foci for Iron Age settlement and burial landscapes, as at Wetwang-Garton Slack (Fig 1.9; Brewster 1971 and 1980; Dent 1982, 1983, 1984, 1985 and 2010). A possible parallel may exist at Nunburnholme Wold, where aerial photography and geophysical survey have revealed the presence of a linear earthwork and an extensive square barrow cemetery; a community archaeology project led by Peter Halkon of the University of Hull has begun investigating the site’s ploughed features, which are not visible on the ground surface (Halkon pers. comm.). Recent work (Fenton-Thomas 2011) at Melton on the southern edge of the Wolds revealed a triple-ditched linear earthwork with a pit alignment, multi-period settlement and multi-period burials. The silting up of the earthwork’s ditches was dated by a Late Iron Age neonate burial in an upper fill (86 cal BC-cal AD 80 at 95.4% or 55 cal BC-cal AD 80 at 94.7%, 1991+/-33 BP, Wk21873, OxCal 4.2.4 and IntCal 13; Bronk Ramsey 2009; Reimer et al. 2013), as well as by Roman pottery, but no dating evidence was recovered from the basal fills of the ditches (Fenton-Thomas

2011: 359-362). Thus, the construction of the earthwork at Melton remains a mystery, as with the majority of other linear earthworks.

1.4.4 Monumental landscapes

The linear earthworks of the Yorkshire Wolds are unusual in that many segments of banks and ditches appear too monumental in scale to have been purely functional; they may have been useful in that they delineated territories or directed the movement of people and livestock through the land, but it is likely that they also held special meaning for the people who constructed and experienced them. Among the more elaborate earthworks that Mortimer surveyed, for example, were those at Huggate Dykes (1905: 369-370, Plate C Fig. Ee). The most monumental portion of these earthworks is comprised of seven closely spaced banks with six ditches (Fig 1.10-1.11). Mortimer (ibid.: 369-370) identified Huggate Dykes as being of a category of earthwork that runs up to the narrow ‘neck’ of a valley and then splits into several different parts, some of which continue along high ridges and others of which run down into the valleys below; comparable examples of this valley neck placement can be found at Garrowby Wold and Acklam Wold. Mortimer (ibid.: 376) argues that the seven-banked portion of Huggate Dykes could have been used to provide protection for cattle when they were being herded through the land, but its configuration is unnecessarily elaborate for a purely functional use. It is likely that this earthwork system would have also had symbolic and social value to the people who constructed and experienced it.

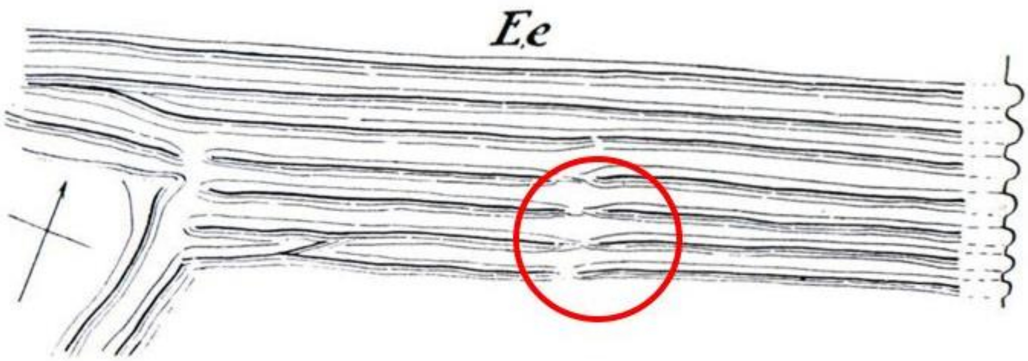


Fig 1.10. Mortimer’s plan of Huggate Dykes
Appears at the bottom of Fig 1.7. The red circle indicates the location of Fig 1.11a and highlights an entrance (after Mortimer 1905: Plate C Fig. Ee).

Fig 1.11 Huggate Dykes
a) Elaborate multivallation, looking N-NE (location of view indicated by red circle on Fig 1.10); b) looking upslope (NE) along one earthwork; c) earthwork following a ridge of high ground, looking S. (Photographs: author)

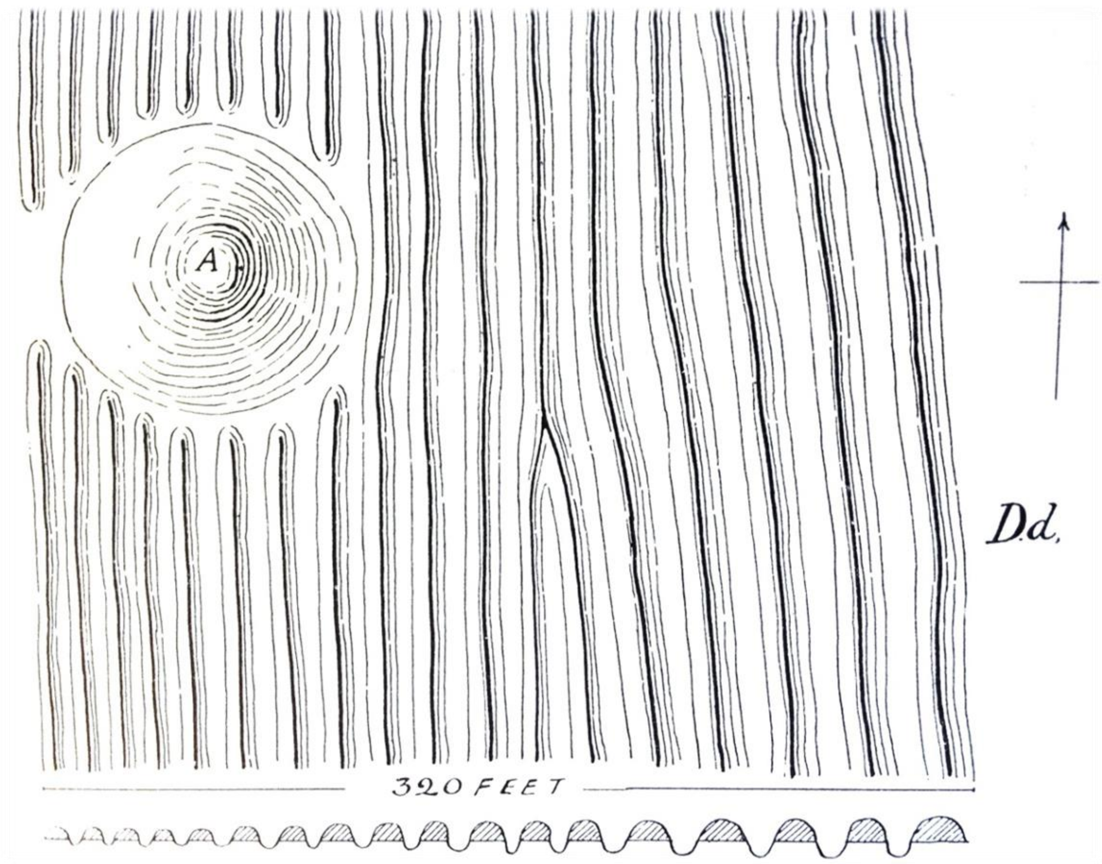


Fig 1.12 Mortimer's plan of the earthworks at Cockmoor Hall
(Source: Mortimer 1905: Plate C Fig. Dd)

A similar, even more impressive example of complex, multivallate earthworks can be found just off the northern edge of the Wolds at Cockmoor Dykes in Snainton, North Yorkshire (Fig 1.12). Mortimer also investigated this impressive system of at least 18 banks and 17 ditches to the east of Cockmoor Hall; these earthworks virtually encircle earlier round barrows (ibid.: 370, 372, Plate C Fig. Dd). They run roughly N-S over the edge of a ridge on the Tabular Hills, and immediately to the west are the parallel linear earthwork systems of Scamridge Dykes and Oxmoor Dykes. Mortimer (ibid.: 370) noted that these earthwork systems differ from their counterparts on the Wolds in that they do not enclose land, and he suggested that they form monumental hollow-ways. Drummond and Spratt (1984; see also Spratt 1988) dispute Mortimer's hollow-way hypothesis and argue that post-medieval rabbit warrens could have created smaller western banks of Cockmoor Dykes. They use place-name evidence, morphology and documents detailing an extensive rabbit warren in the area to support their claim that only the six easternmost banks are prehistoric; this argument is not as parsimonious as Mortimer's belief that the entire system was constructed in prehistory. Drummond and Spratt (1984) provide an inconclusive plan of the site and their study lacks excavation and sections. In contrast, Mortimer (1905: Plate C Fig. Dd) illustrates how the banks and ditches gradually increase in size from west to east, in a manner that seems too even to indicate multiple construction events with different purposes spread out over thousands of years. This does not mean that post-medieval people did not use the banks for rabbit warrens or other practices, but rather would suggest that these earthworks might have had a longer lifespan than expected, albeit not necessarily a continuous one.

The tendency for linear earthworks to be located in landscapes rich with round barrows suggests that they were key to the perpetuation and renegotiation of history in the past (Gosden and Lock 1998), a theme discussed in greater detail in Chapter 2. Linear earthworks carved up earlier landscapes and produced new links within the land, directing and restricting movement in certain locations. Effectively, they created places by reproducing and reinforcing socio-spatial relationships amongst different tracts of land and, by extension, different groups of people. Over time they would have played a key role in memory, and they would have been socially and psychologically meaningful to communities when they were in use.

1.5 Writing biographies

In order to write a biography of landscape, first it is necessary to establish what landscapes are, and to reflect on the ways in which we may choose to analyse and depict them. As places do not exist independent of people, the interconnectedness amongst agents must be explored. The next chapter reviews existing literature on theories of space/place, agency and memory, and develops a model for tracing agency.

Chapter 2.

Lines in context: landscapes, biographies and agency

> *A chapter on method has ended as a narrative, for the subject of study and the study have shown themselves to be one.*
>
> *J Hawkes 2012 [1951]: 25*

Before examining the landscapes in which the boundary systems of the Yorkshire Wolds were situated, it is necessary to reflect on the history of landscape archaeology and to outline the theories underpinning this study. Although landscapes have always been an integral part of studying the past, 'landscape archaeology' as a distinct sub-discipline has its roots in historical geography. Aside from bringing new methodologies, paradigm shifts in archaeological thought have diversified the research questions and motivations of archaeologists studying prehistoric landscapes. Developments in archaeological theory since the 1990s have moved the study of landscapes beyond processual emphases on environment and formation processes. Peoples' experiences of landscape are deeply rooted in the ways that they learn to 'dwell' in the world (Heidegger 1978 and 1988 [1982]; Ingold 1993, 2000), and thus, landscape cannot be studied in isolation. Rather, it must be considered as intertwined with all other aspects of life, including identity, social organisation, politics, economy, cosmology and memory. This project explores the biography of a landscape through the use of GIS and fieldwork, and it tackles the meanings of later prehistoric boundaries with theories of agency and memory. These approaches are integrated to build up a picture of how the boundary systems of the Wolds were created, maintained, experienced and abandoned.

2.1 From landscape archaeology to an archaeology of '-scapes'

How archaeologists interpret landscapes relies on their adopted paradigms, which may offer radically different definitions of culture, identity and agency. Processual archaeology tends to regard culture as an adaptation, a way of surviving in a particular environment, an idea popularised by White (1959a: 234; 2007 [1959b]: 8) and later by Binford (1962: 218). With this understanding of culture and environment, landscapes can be examined in terms of the resources that they offer and may be incorporated into environmental models such as optimal foraging theory. A core-periphery model may be used to explain networks of relationships amongst different places, assigning precedence to some over others. Examples of processual, functionalist approaches to landscape include Fleming's (2008) work on the prehistoric Dartmoor Reaves and Halkon's (2008) analysis of the later prehistoric and early historic Foulness Valley; both studies are environmentally aware, and detailed maps feature prominently. Functional views of landscapes are conducive to computer modelling and the use of GIS (see, for example, Sections 6.3-6.4), but they may fail to address what landscapes might have *meant* to past peoples. At the most processual extreme of the spectrum, past people's perceptions of landscapes may be treated as irrelevant and culture as epiphenomenal. Thus, the essence of why people used the land as they did is lost.

In contrast, post-processual archaeology outlines culture as set of mental constructs and offers a variety of ways to think about human interaction with landscapes, including memory (see Section 2.4), agency (see Section 2.3) and biography (see Section 2.2.2 and Chapters 4-7). As such, they emphasise the social dimensions of landscape—understanding the land as more than just practical, and moving beyond its value in terms of economy and status—and tend to investigate themes such as place-making and cosmology (for later prehistoric studies, see e.g. Brück and Goodman 1999; Brück 2001, and in response, Fleming 2002; Haselgrove and Pope 2007; Haselgrove and Moore 2007). Another tool of some post-processual landscape studies is phenomenology (Tilley 1994, 2004, 2010), which attempts to humanise and contextualise space and place in order to understand what they meant to people in the past. Tilley's phenomenology draws upon Heidegger's concept of dwelling (Heidegger 1978; 1988 [1982]), reinterpreting it in a way that attempts to recreate and understand how past people engaged with their surroundings. Post-processual studies have broadened to include not just landscapes, but also waterscapes, smellscapes, soundscapes, taskscapes and countless other ‘-scapes’ (e.g. Ingold 1993; Gamble 2008; Rainbird 2008), some of which may be more archaeologically recognisable than others. These ‘-scapes’ interconnect to form an archaeology of experience that goes beyond land itself.

Although useful for a subject-centred view of (land)scapes, the main drawbacks of a phenomenological approach are that it generally lacks a replicable methodology and that it assumes that people’s perceptions of landscape are largely uniformitarian (see Fleming 2006 for a critique of the use of phenomenology in archaeology). Attempts have been made to standardise a methodology for phenomenological study and to defend the theory behind it (e.g. Cummings et al. 2002; Cummings and Whittle 2004; Tilley 2004 and 2010; Hamilton et al. 2006; Barrett and Ko 2009). Despite these attempts, however, the results of a phenomenological study may not be verifiable because it requires one to personally experience a landscape, usually by passing through it. It is challenging enough to replicate the experiences of one’s contemporaries, and this is made far more difficult when attempting to understand how people in the past would have felt in—and interacted with—a landscape. Furthermore, phenomenologists may read too much into the features in a landscape, attributing meaning to monuments and spatial arrangements with what Barrett and Ko (2009: 284) call ‘unwarranted optimism’. In essence, they may have joined more or less random dots together to form a neat picture when one was never intended to be there. Nevertheless, phenomenology can be used to supplement the shortcomings of a more processual landscape analysis, even if its only major contribution is to familiarise a researcher with his or her area of study. Phenomenology forces the researcher to contemplate movement within a landscape; this is something that he or she might not otherwise notice because of walking is often intuitively—almost unconsciously—performed.

It is necessary to recognise the limitations of both functionalist and phenomenological approaches, but they need not be dismissed altogether. They can be employed together so that each complements the other’s shortcomings, and thus tools such as GIS may become vehicles for experiential understandings of the past (see Section 6.3). To supplement to one’s personal experiences, history and ethnography can provide additional perspectives on how people live with landscapes and can challenge preconceptions that one might bring to a phenomenological study. What landscapes meant to past people is important and must not be treated as epiphenomenal. Rather, an integrated approach should be employed to reconstruct past landscapes, and the very definition of *place* must be made explicit.

2.2 Space, place and time: 'appropriating portions of the earth' and the experience of landscape

Experiencing a landscape involves developing a sense of place: an understanding of somewhere as being distinct from everything else around it. Places are socially constructed, and it might be argued that spaces are as well. Space is the everywhere between these *somewheres*. It is, on the one hand, mathematical and scientific; it is calculable. On the other hand, space is as socially mediated as place, as argued by the geographer Tuan:

> 'Space, not place, tantalized Americans when the frontiers were open and resources appeared limitless. Space is abstract. It lacks content; it is broad, open, and empty, inviting the imagination to fill it with substance and illusion; it is possibility and beckoning future. Place, by contrast, is the past and the present, stability and achievement.'
>
> (Tuan 1975: 164-165)

Space appears to be two things at once, both factual and constructed. Space is *imagined* to be neutral and empty, just as places are imagined to be full of history and meaning. The key difference is that places are centres of meaning that need to be maintained through experience (Tuan 1975: 152), and without continued interaction between people and place, they are forgotten. Space can become place and vice versa, but these two states are not directly interchangeable. The change from space to place requires human intervention, just as a chemical reaction changes one compound into another only with the addition of something else, such as heat or another compound. When human thoughts about and interaction with a place cease, that place once again becomes space (see Section 6.3.5 and Chapter 7 for discussions of how actor networks and the intertwined events which constitute landscape biographies may extend this process through deep time, effectively preventing places from turning back into space).

Space and time are negotiated and appropriated to make places, but places need not necessarily be fixed in either one specific space or at one particular time. Because they are constructed, places are subject to modification, redefinition and dissolution. For instance, when neighbouring nation-states dispute and re-establish boundaries, tracts of land may shift from the control of one state to another, and the inhabitants of that land may find themselves to be citizens of a foreign country with the stroke of a pen. Similarly, unified places may fracture and become separate worlds, as with the collapse of the Soviet Union or the break-up of former Yugoslavia. These places are no more, and yet the land and people are physically still in existence, occupying the same space that they did in their former places. Finally, some places are large and important in sentiment but occupy a miniscule geographical footprint; Vatican City is a micro-country and yet it is the heart of the Roman Catholic world.

If place is socially constructed and negotiated, then a person's *sense of place* is necessarily constructed in a similar fashion. Tuan argues that sense of place is essentially experience, and he stresses that one must know a place 'in the bones as well as with the head' (1975: 165). By living or dwelling in a place and experiencing it habitually, that place becomes physiologically and mentally ingrained in a person. The social anthropologist Keith Basso has written much on the subject following his ethnographic work with the Western Apache of the American Southwest. For the Western Apache, places embody and reproduce social norms. The land 'stalks' people, and stories about places are said to 'shoot arrows' to guide people morally; Basso relates how a young Apache woman who disregarded customs of dress at a puberty ceremony was chastised with a story, and how the place at which that story takes place began to 'stalk' her (1996: 56-57, 60-61). The land has a moral dimension and helps to ensure that people live according to social expectations, and thus a sense of place is a working understanding of Apache society. Basso rejects more processual approaches to sense of place and argues that:

> '... [S]ense of place—or, as I would prefer to say, *sensing* of place—is a form of cultural activity. ... [S]ense of place, as I have made it out, is neither biological imperative, aid to emotional stability, nor means to group cohesiveness. What it is, as N. Scott Momaday (1976) has suggested, is a kind of imaginative experience, a species of involvement with the natural and social environment, a way of *appropriating* portions of the earth.'
>
> (Basso 1996: 143, emphasis original)

Although Basso is right to stress the importance of sense of place as a creative social construct, his assertion that it is *not* biological or psychological—at least not in the context of his ethnographic work with the Western Apache—forms only a partial picture. A culturally constructed sense of place and a biologically conditioned one are not mutually exclusive, and the physical environment in which someone forms a sense of place must not be ignored. Sense of place can be many things, although its 'imaginative experience' aspect may be the most useful and interesting to anthropology and archaeology.

2.2.1 Depicting space and place: Geographic Information Systems, remote sensing and virtual archaeology

One method for mapping and analysing the past is Geographic Information Systems (GIS). GIS is a form of digital cartography that can be used for 2D visualisations, 3D reconstructions and mathematical and spatial modelling. It has been employed by a variety of disciplines from civil engineering to astronomy to archaeology (e.g. Gaffney and Stančič 1991; Gaffney et al. 1996; Llobera 1996, 2003; Chapman 2006; Crampton 2010). GIS was first used in archaeology in the 1980s as a predictive tool for site location modelling (Kohler and Parker 1986; see Chapman 2006: 17-25), and it has become an integral part of archaeological landscape studies. Site plans, geophysical plots and photographs can be georeferenced and displayed with other data sets in a GIS, and the user can zoom in and out to different scales; thus sites, or even individual features, can quickly be contextualised.

As a digital tool which is dynamic and interactive, the results of a GIS-based study can be difficult to distil down to a set of static, 2D images—the standard for most academic publications. A recent trend in GIS-based landscape analyses is to publish results online in the form of a WebGIS, which also helps to disseminate information to a wider audience. This approach was taken by the Valley of the First Iron Masters Project (Halkon 2004; www.ironmasters.hull.ac.uk), which studied East Yorkshire, and by the Online Non-Destructive Archaeology (ONDA) project, which used the Italian site of Egnazia as its pilot study (Caggiani et al. 2012; www.gisonda.it). Web delivery allows for the creation of a user-friendly GIS which can engage the public and archaeologists alike, although it was beyond the scope of this PhD. Instead, the GIS layers used by this project are provided in Appendix A.

Although the results of digital mapping with GIS are often presented as science, one must bear in mind that all maps—produced either digitally or by hand—are interpretations and therefore contain biases (e.g. Crampton 2010; Hacıgüzeller 2012). Crampton (2010) cautions against the uncritical application of GIS as a 'science' rather than as a methodology, and he reminds us that all maps are laden with political and sociological meanings. Mapping is often conceived of as a space-orientated activity, but the creation of a map is full of intentionality and is equally about places. As soon as we assign names to dots on a map we have reinforced their status as places, distinguishing them from the other spaces on the map that lie amongst them, and by mapping boundaries we signal some sort of difference between two spaces or places. Even what does and does not constitute a map is culturally and demographically defined, falling somewhere on a 'sliding scale of mappiness' (Crampton 2010: 44). It is the responsibility of the archaeologist who chooses to present his or her work in a GIS to acknowledge these implications and to employ a well-theorised approach, of which GIS is only one component. Responding to critiques of GIS which portray it as a poor representation of past realities, Hacıgüzeller (2012; compare with Gillings 2012) argues that the types of knowledge that GIS produces are no less valuable to archaeologists—nor any less true—than knowledges produced through fieldwork and engagement with the physical landscape:

> ‘Walking across the landscape or excavating a site is not the only legitimate way to create archaeological knowledge. By interacting with digital or non-digital technology and a series of inanimate and animate materials, we create narratives about past lives as well. It is important to realize that we are recreating the worlds of past people in the present, whether that is with our bodies, GIS, or something else.’
>
> (Hacıgüzeller 2012: 257)

This view of GIS emphasises the human agency and historical context of the tool, and reminds us that GIS should not be seen as a mere translation of the past. Ideally, the best archaeological narratives will draw upon multiple ways of knowing to tell the stories of the past. By combining GIS-based spatial analyses with other techniques, such as remote sensing (e.g. satellite imagery, geophysical surveys) and experiential fieldwork (i.e. phenomenology), it is possible to create virtual landscapes which are human- or animal-centric, and imbued with meaning (see Sections 6.3-6.4).

2.2.2 The life and death of a place: creating biographies of landscape

In 1979, the geographer Marwyn S Samuels called for a more critical approach to landscape which not only seeks to understand people in the environment, but also sees landscapes as being at the heart of people:

> ‘However rational, there is something unreasonable about a human landscape lacking in inhabitants... [This] reveals something terribly wrong about the way in which we look at the event and assess the meaning of landscape. It betrays an intellectual and perhaps a cultural milieu in which the most ordinary of questions—who did it—is curiously irrelevant to the meanings we give our landscapes. Simply phrased, it unveils a context in which the idiosyncratic, the particular, the individual himself and the self itself have lost much of their own meaning.’
>
> (Samuels 1979: 52-53)

Calling this approach a *biography of landscape*, Samuels demands that we devote as much energy to discovering the authorship of places as we do to mapping the physical landscapes themselves, employing ‘a logic and a method prepared to assert the decisive role of the individual in the making and meaning of landscape’ (ibid.: 60). This project postulates that it is possible to write a biography of the linear earthwork landscapes of the Yorkshire Wolds, even without knowing the names of the individuals who created these enigmatic monuments. By studying the nested, intertwined life histories of particular earthworks, people, animals, objects and other places on the Wolds, we can begin to write a narrative of the later prehistoric landscapes of the region in which linear earthworks themselves co-authored their own histories. Combining theories of agency, networks, meshworks and memory with Samuels’ explicitly anthropocentric model for landscape biography, we can imagine a world where landscapes and the places within them were believed to have both meaning and power, and where the agency of places may have been seen as equal to that of people.

In studies of material culture, adopting a biographical approach to tell stories about the lives of objects is an established practice, and the life of an object is recognised as being deeply intertwined with materiality, identity and human social interactions (e.g. Appadurai 1986; Gosden and Marshall 1999; Joy 2009). More recently, archaeological biographies of houses (e.g. Gerritsen 2003; Bradley 2005; Büster 2012; MacDonald 2014), communities (e.g. Gerritsen 2003; Moore 2007; Giles 2012) and landscapes (e.g. Pollard and Reynolds 2002; Darvill 2007; Roymans et al. 2009; Reader 2012: 47-100; Kolen et al. 2015) have also been written. A biographical approach can help to overcome artificial, imposed temporal divisions between different periods of the past and the present (i.e. separating the Bronze Age from the Iron Age, and prehistory from the medieval period), which may obscure our understanding of monuments, places and landscapes. For example, Roymans et al. (2009) trace the biography of the heathland in the South Netherlands from prehistory through to contemporary landscape design, exploring how the processes such as Christianisation of pagan places and the organised reclamation of marginal land from the nineteenth century onward have shaped the ways that people perceive and interact with places. Drawing upon this tradition of archaeological biographies, this project examines the births, lives, deaths and, where applicable, rebirths of geographically-related places on the Yorkshire Wolds. It then synthesises these biographies and considers the nature of their connectedness in order to understand a wider landscape.

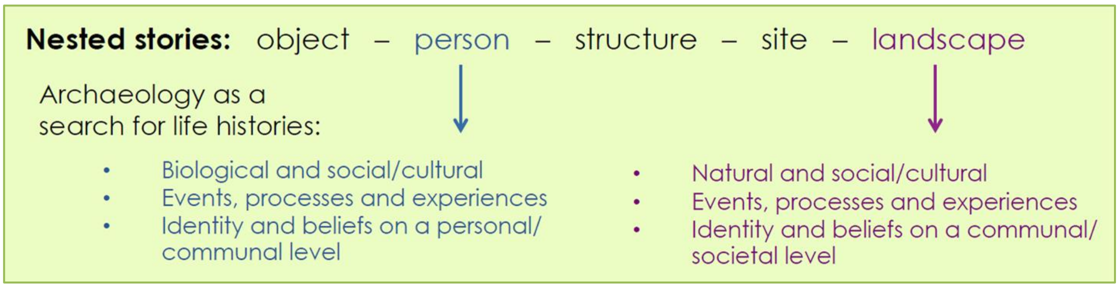


Fig 2.1 Nested life histories and a biographical approach to landscape

To create a biography of landscape is to tell the intertwined stories of people and places, of their lives and deaths (Fig 2.1). Homes, or more specifically, houses, lend themselves to biographies because they are intimately associated with human life cycles and daily activities (Terkenli 1995: 330-331). Recent biographies of houses and their inhabitants include those of the Iron Age roundhouses at Broxmouth Hillfort in East Lothian (Büster 2012), and that of Taigh Mòr, the grand home of the archaeologist and industrialist Erskine Beveridge's on North Uist (MacDonald 2014). Giles (2012: 65-90) takes a biographical approach to households and entire communities in Iron Age East Yorkshire, looking for connections between the living and the dead. She examines how these communities would have constructed and re-negotiated their landscape, and linear earthworks feature as key players in her biographies. Giles' (2012) biographies artfully integrate people, animals, objects and the landscape; the people remain the main focus of the narrative, however. This PhD asks what the biography of the later prehistoric landscapes of the Yorkshire Wolds would look like if, instead, *places* became the main focus, and if people and objects were examined only in the context of their interactions with the land. In other words, this project makes places the protagonists of its narrative.

In order to tell the biography of a landscape, the lives and deaths of a selection of people, places and features within that landscape must be explored in detail, and the places must be considered as important and as deserving of our attention as people. Biographies of place can be told in the form of a narrative, which need not oppose a more traditional academic style. In his exploration of the Taigh Mòr's history, MacDonald argues for the power of narrative and the need to preserve the past in this form:

> 'The sheer emptiness of the house—the absence of material effects—was, for some islanders, a space that could be filled only with stories... This is how stories are entrusted; and because they are entrusted *as* stories, there is an ethic to preserving this form.'
>
> (MacDonald 2014: 480, emphasis original)

Thus, narrative is a means of understanding and knowing a place or landscape, and its role in academic writing is to retain the integrity of the manner in which people experienced that place. When the stories of a place are difficult to access, it becomes essential to integrate many strands of evidence into that place's biography. Concerning the creation of narratives, Daniels and Nash (2004) contend that journeys, maps and the biographies of people are intertwined, and therefore the division of geography and biography into two separate fields is an artificial one. Maps and landscapes are intimately connected with the lives of people, and thus in order to avoid writing a biography of landscape which is fictional, an understanding of the nature of those connections—the ways in which places and people interacted in the past—is vital. In order to do this, places must be conceived of as having agency.

2.3 Agency in archaeology

If archaeology aims to study how people lived in the past, then it is crucial that we attempt to understand how agency operated through those people and in the worlds around them. Whilst post-processualists tend to capitalise on agency, processual models of landscape are often accused of omitting it altogether. Much of the agency theory employed in archaeology draws upon the work of the anthropologist Alfred Gell (1998), who conceptualises the agency of art in both Western and non-Western contexts. Gell is able to examine the agency of particular artists, tracing the power or mind of an individual through the material remains of their oeuvre (1998: 232-237; see Section 2.3.1, below). Basso (1996: 66-67) criticises the environmental models of human ecologists, which work at a systems level and ignore individual choices and agency, thus leaving out details fundamental to human-landscape interaction. Although anthropologists such as Basso and Gell may be able to trace agency at the personal or individual level, often the constraints of the archaeological record mean that specific people are unidentifiable. Archaeologists tend to look for patterns that will only be visible at a communal or systems level, with occasional glimpses of individuals afforded by techniques such as osteological analysis, or by the recognition of a specific signature, like that of a single potter who was responsible for producing several vessels. Thus, we may not always be looking for agency at the same scale as our social anthropologist counterparts, and it becomes evident that our definition of agency must be critical and explicit.

2.3.1 Theories of agency and connectedness

In archaeological theory there has developed a tension between structuralism, which proposes that society or culture structures the actions of people through underlying rules of behaviour (especially Lévi-Strauss 1968; see also Bourdieu 1977, 1989; Giddens 1984), and agency, which priviledges the power of the individual to effect change (e.g. Barrett 1990; Dobres and Robb 2000; Arnold 2001; Dornan 2002; Robb 2010). Joyce and Lopiparo (2005: 365-366) argue that '[s]tructuration is simultaneously the exercise of agency and the constitution of society'. Thus, they break down structures into patterns of agents' actions and call the result 'structured agency'. Although structured agency provides a framework from which to work, a still more nuanced model may be proposed.

Robb (2010) calls for more rigorously contextualised use of the term 'agency', so by breaking it down into component parts, one can begin to talk specifically about agency at different scales and in a variety of situations. In order to explore the ways in which prehistoric peoples might have related to and interacted with their landscapes, the agency theory developed by Gell (1998) is particularly useful. His concepts of distributed agency and the extended mind are defined in the following way:

'[A] person and a person's mind are not confined to particular spatio-temporal coordinates, but consist of a spread of biographical events and memories of events, and a dispersed category of material objects, traces, and leavings, which can be attributed to a person and which, in aggregate, testify to agency and patienthood during a biographical career which may, indeed, prolong itself long after biological death. The person is thus understood as the sum total of the indexes which testify, in life and subsequently, to the biographical existence of this or that individual.'

(Gell 1998: 222-223.)

Gell (1998: 232-237) gives the example of an artist's oeuvre, which contains separate works that can be brought together to represent parts of a whole, and that can be used to tell a narrative about the artist's personal development through time. In essence, personhood is shared through events and the exchange of material items; these events and interactions are stages for agency, and thus a person's agency becomes distributed as his/her person itself does.

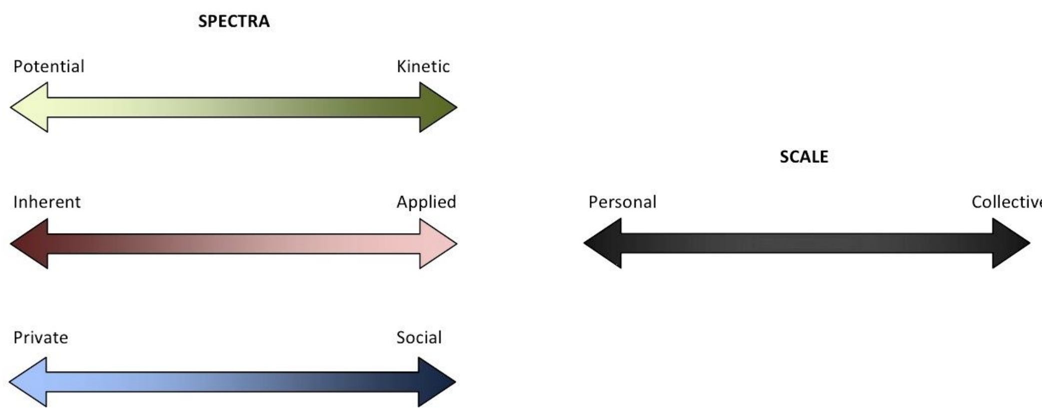


Fig 2.2 Aspects of agency
The spectra of agency operate together; a single action will have all three dimensions. The scale of agency ranges from personal (individual or single action) to collective (group or aggregated action; structured agency), the latter of which is more likely to be recognised archaeologically. (Source: author)

Adapting Gell's (1998) argument, a new, more detailed model of agency can be proposed: agency is, metaphorically, multi-scalar and multi-spectral (Fig 2.2). Agency is multi-scalar in that it can operate at nested scales ranging from personal to collective (aggregate). It is at the collective scale that the concept of structured agency makes the most sense, and it is this scale that is most archaeologically visible. Agency is multi-spectral because it has three dimensions or spectra that co-exist and work together. On one spectrum, agency may range from potential to kinetic. Borrowing from the concepts of potential and kinetic energy, this spectrum identifies whether agency is at rest—and therefore conserved as the ability to effect change—or in the process of effecting change. Kinetic agency may be transferred onto another agent, which leads to the second spectrum of inherent-applied agency. Inherent agency, whether potential or kinetic, is essential to an agent and requires sentience, whereas applied agency is given to someone or something that may or may not be sentient and that consequently becomes an agent. Applied agency is transferred and then reflected back; for example, a landscape could become laden with cultural meaning and then subsequently effects change on a people. That landscape did not have inherent agency but received the power to be an agent from a group of people who projected meaning and power onto it. Once that projection has happened the landscape is no less an agent than the people who inhabit it (but the landscape does not obtain inherent agency because it was not capable of having it in the first place). Finally, the last spectrum measures the degree to which a particular agency affects larger social structures. An agent may effect change in private outside of the knowledge of society—much like Schrödinger's cat (Schrödinger 1935)—and therefore would not affect the social norms or expectations of the group, or the change may be done socially and publically in a way that directly affects the society at large. This spectrum is similar in concept to the personal-collective scale, but the two must not be confused. Private agency implies that an individual, sentient agent is interacting with a non-sentient agent, whereas personal agency may occur with sentient or non-sentient agents. A single person might perform an action with social implications; this example would fall on the social end of the spectrum but the personal end of the scale. Alternatively, several people may be agents in private (with only objects present during their interactions) and never know of each other's agency, like many Schrödinger's cats all in separate boxes; this would be a collective example of private agency, and the larger social structures at work might never be affected by these actions.

The concept of agency implies connectedness amongst agents and non-agents, and several network-related models—including Actor Network Theory (Latour 1996, 2005), entanglements (Hodder 2012), meshworks (Ingold 2007) and assemblages (e.g. Harris 2014)—offer ways to trace connections. The key premise behind all of these models is that people and things are interrelated, and therefore cannot be completely separated from the context in which they act. White's (1959) concept of the locus of culture (Fig 2.3) postulates that what anthropologists perceive to be culture is the sum of people, objects and the interactions or interrelationships amongst them. These components are the same as those of Gell's (1998) distributed agency, and together they form a network or web of interaction amongst agents, which will have both material and spatial aspects which may be visible archaeologically (e.g. with different sites or regions sharing particular monument types or material culture). Landscapes provide the context in which the exchanges of such things and ideas happened in the past, and places within the landscape might also be considered actors (Fig 2.4)—some may even have been perceived as active participants by the people who created and encountered them, with the same types of agency as the people themselves (Fig 2.4, in the blue thought bubble).

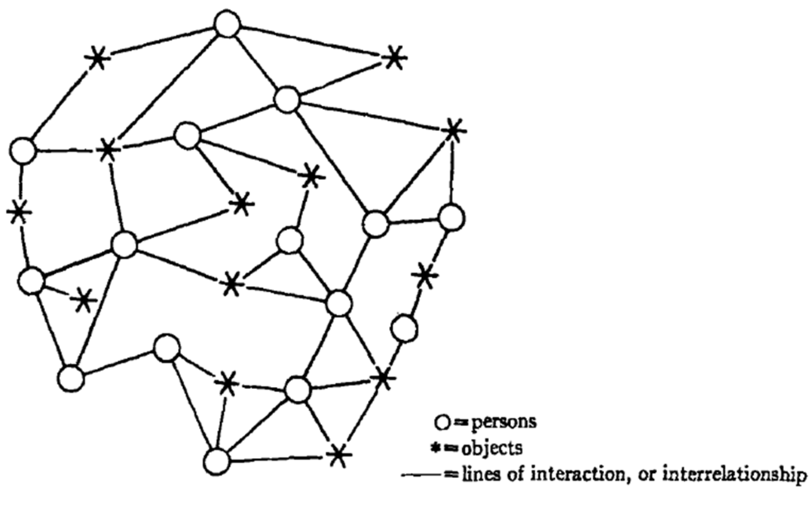


Fig 2.3 White's locus of culture
White (1959) argues that culture is located in people, material objects and the interactions amongst them. Although reductionist in the extreme, this model provides a useful starting point from which to develop a more nuanced concept of cultural interactions (specifically, agency). The three components of the diagram are the same as those of Gell's (1998) distributed agency, and the web-like network which they form has inspired Fig 2.4. After White (1959: Fig. 3).

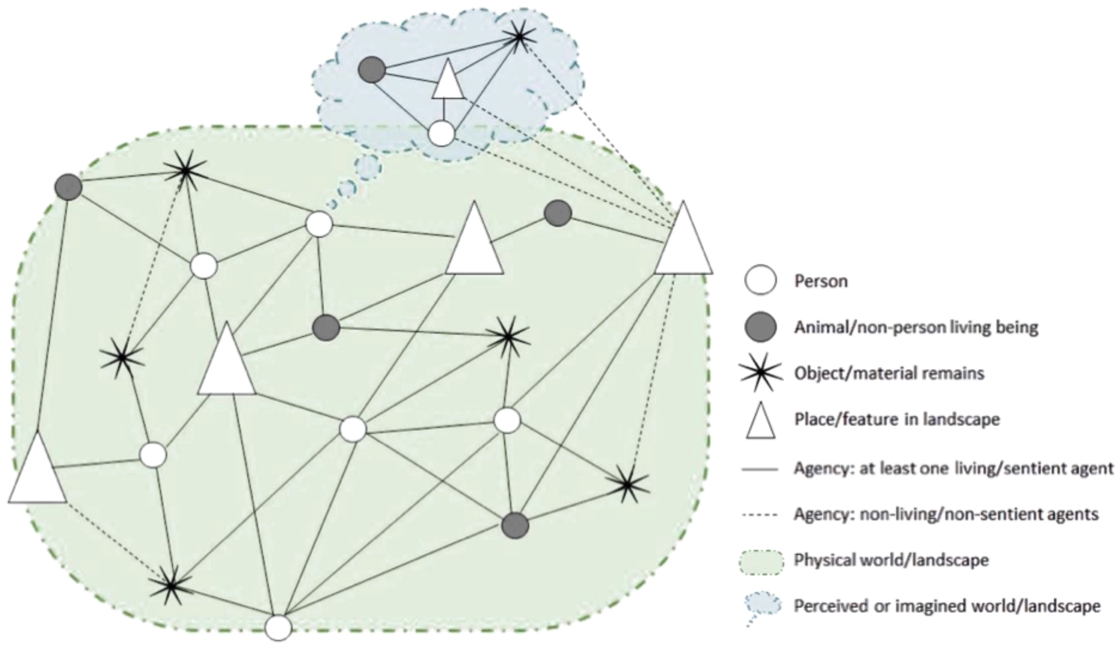


Fig 2.4 Tracing agency within landscapes
In addition to people, objects and interactions, this model of agency incorporates animals/non-human beings and the landscape, which may have exercise different agencies in the world of the living (i.e. the most likely world to be reflected in the archaeological record) and in imagined worlds (i.e. the constructs and beliefs of people, which may be more difficult to access archaeologically). Inspired by and modelled after White (1959: Fig. 3; see Fig 2.3). (Source: author)

Networks require movement in order to bring together agents, both human and non-human. Ingold (2007: 72-103; drawing on Lefebvre 1991: 117-118) proposes that there are two categories or modalities of movement: transport and wayfaring. Whereas transport occurs along routes which form networks, wayfaring occurs along trails which form meshworks (ibid.: 80-81; Fig 2.5; see also Sections 6.4 and 7.1.2). Ingold's transport networks (Fig 2.5a) are imposed in a top-down manner and are 'destination-oriented' (ibid.: 77). The act of transport involves movement from one place to another, with the journey along the way being of minor importance. Mapping a transport network produces a diagram that looks much like Fig 2.3-2.4, where places are dots connected by straight lines. In contrast, wayfaring prioritises the journey between points in space, and the path taken by the traveller—which is not teleological—drives the process of place-making. In meshworks (Fig 2.5b), places are not fixed points in space with connections between them, but rather the intersections of jumbled paths, where agents linger and interact. Like the slime trails of slugs and snails, or the images produced by smartphone applications such as MapMyRun, wayfaring trails are meandering and created through a bottom-up, ground level approach to travel. The difference between Ingold’s transport networks and wayfaring meshworks may be illustrated by the comparison of the standard view of Google Maps with Google Street View: the former creates a representation of the world which is useful for calculating the quickest routes between places; the latter allows users to virtually meander through the world, using buildings and natural scenery to navigate and become accustomed to a particular landscape. Although both transport networks and meshworks may be drawn as two-dimensional maps, seen from a birds-eye view (Fig 2.5), Ingold’s distinction between the two lies in the manner in which they are created.

This project draws on Ingold’s concept of meshworks in order to understand the linear earthworks of the Yorkshire Wolds. Wayfaring seems an appropriate interpretation for the patterns of movement that created and occurred around linear earthworks (see Section 6.4; Fioccoprile in prep), but this does not mean that the idea of networks should be dispensed with altogether. Although Ingold’s transport networks might not account for the movement that occurred on the Wolds in later prehistory, a broader definition of networks (after e.g. White 1959; Latour 1996, 2005) allows us to trace connections amongst linear earthworks, people, animals, objects and other places.

a **b**

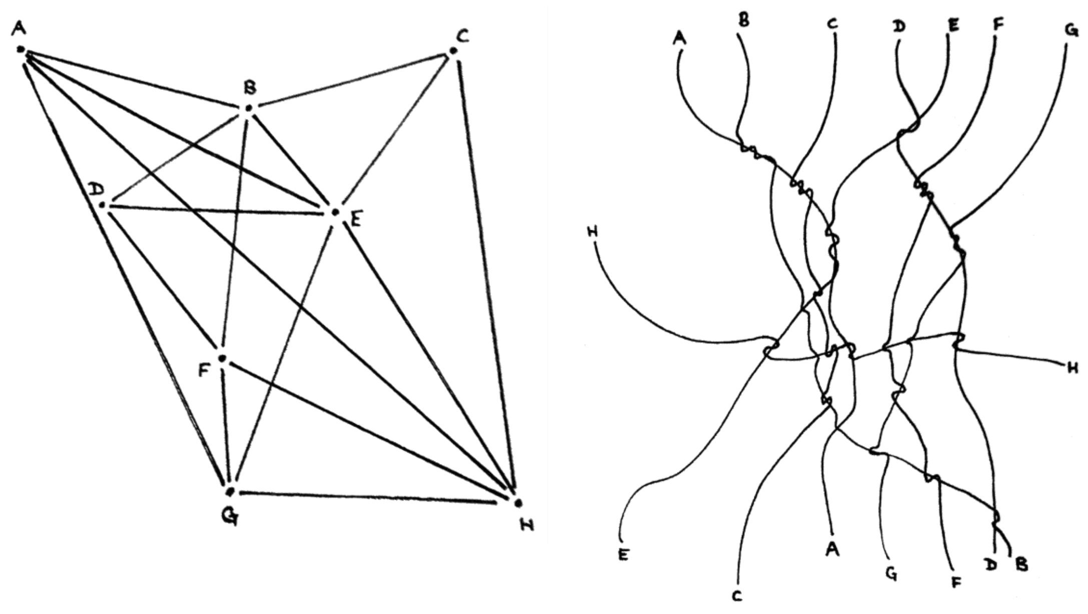


Fig 2.5 Ingold’s networks (a) and meshworks (b)
After Ingold (2007: Fig 3.1).

2.3.2 The agency of control

Early discourses on agency in archaeology began within the processualist paradigm of the 1970s and ’80s; they focused on power and prestige, and tried to identify individuals’ ability to effect (largely unidirectional) change within past societies (see Robb 2010: 496-497). Although our understanding of agency has become more diverse and now may be used to explore alternative agencies (such as those of animals), it is still important to consider how past agents may have exercised control. It is necessary to think broadly about control, considering its physical, economic, social, moral-spiritual and political manifestations. Agents may achieve these types of control through a variety of strategies, including violence (Armit 2007 and 2011) and gift giving (Mauss 1954).

Agency has implications for the archaeology of landscapes beyond being able to identify who built certain monuments (see Section 7.1). Landmarks or places may become imbued with meaning in such a way that they take on the agency of or *become* certain people, and can thus exercise power over a community. In addition to the example of an artist’s oeuvre, Gell (1998: 251-258) uses Maori meeting houses to illustrate his concept of the ‘extended mind’. Traditional Maori houses *are* the ancestors, or more specifically, the ancestors’ viscera, where the Maori believe the mind is located, and thus the houses wield the agency of deceased ancestors (Gell 1998: 253). These places embody genealogies, and the art within them is a unifying feature across time and space. Similarly, Basso (1996: 60-61) describes how Western Apache people who have transgressed social norms are chastised by wise family members with stories, and that the places in which those stories are set then take on the moral teachings of these wise people. These places become ‘grandmothers’ and ‘grandfathers’ to those who need moral guidance so that when their wise kin die, the stories (and, psychologically, their kin themselves) live on. In both of these examples, agency is closely linked to memory, which is also a key component of landscapes.

2.4 'Maps in our minds': memory and landscapes

It would be difficult to undertake a landscape study without considering the role of memory in the creation and experience of place. Memory unites places, larger landscapes and histories; it intertwines space, place and time. Basso's (1996) work on Western Apache place-names offers insight into what these places and place-names are said to have meant to Apache ancestors. Place-names are descriptive and evocative so that each one forms a mental picture and tells a story. These stories are vital to Apache history, memory and identity, as place-names are believed to be the exact words of the ancestors who first encountered those places (Basso 1996: 10). Thus, the name for a particular stretch of marshy water is *Goshtł'ish Tú Bił Siką'né*, or 'Water Lies With Mud In An Open Container', because that was what the ancestors found there (Basso 1996: 10-12). Western Apache landscapes are spatially organised by place-names, and the people learn the lay of their land by learning all of the place-names, the places' physical locations and the stories behind them. Upon being presented with a map by Basso, an Apache elder remarked, 'White men need paper maps… We have maps in our minds' (Nick Thompson, cited in Basso 1996: 43). These mental maps not only help the Western Apache to navigate the physical landscapes in which they live; they also provide vital information that must be remembered for potentially problematic events in the future. Western Apache place-names help people to work towards wisdom, where wisdom is conceived of as knowing how to avoid danger, and thus is essential for a long life:

> 'Wisdom sits in places. It's like water that never dries up. You need to drink water to stay alive, don't you? Well, you also need to drink from places... Then you will see danger before it happens. You will walk a long way [on the trail to wisdom] and live a long time. You will be wise. People will respect you.'
>
> (Dudley Patterson, quoted in Basso 1996: 127.)

Thus, the memory involved in Western Apache place-names helps people to look both backwards and forwards in time (backwards for advice from ancestors, and forwards in the sense that they will be prepared if danger should occur).

Often archaeology lacks the place-names that make ethnographic work so colourful, so we must look for indications of memory in other forms. Chadwick (in press) draws attention to the evocative names that linear earthworks were given from the medieval period onwards, such as Devil's Dykes. He argues that 'some [earthwork names are] rooted in dimly recalled social memories, but others [are] the result of expedient ideological and political discourses, and local legends', and that similar processes of place-naming and place-making could have taken place in prehistory (ibid.: 20). Prehistoric communities would have created and redefined their identities and histories through the construction, maintenance and adaptation of places within the landscapes around them. Trigger (1996: 42-43) has claimed that whilst ancient people would have sought to explain features in their landscapes, 'there is little evidence of a desire in most human societies to use material remains to learn about the past. Instead, these remains were explained in terms of commonly held beliefs that in their specificity are usually unknown to us'. This contrasts with Bradley's (2003: 225) argument that the materiality of already-ancient monuments in prehistoric landscapes would have affected the ways in which prehistoric peoples learned about those monuments. People would have interacted with older features: they might have venerated them, avoided them, destroyed them, copied them, been perplexed by them or just taken them for granted, but these people would have, at some point, been interested to know how, why, when and by whom they were constructed.

Gosden and Lock (1998) have explored how landscapes reflect prehistoric histories, breaking history into two categories: genealogical histories, where ancestors would have been remembered by name and their relationships to the living community, and mythological histories, with which communities would have looked farther into the past beyond the reaches of genealogical memory. The authors believe that the 'discontinuous' Late Bronze Age activity at the hillfort site of Ram's Hill on the Berkshire Downs suggests a collective memory of the site over several centuries, and that this memory would have been fresh enough to still recall genealogies (Gosden and

Lock 1998: 6-7). Similarly, the later prehistoric linear earthworks at Uffington, Liddington and possibly Segsbury are aligned on Early Bronze Age round barrows, and these alignments could potentially be the products of genealogical history (Gosden and Lock 1998: 8). Gosden and Lock (1998: 11) argue that, in contrast, the Iron Age phases at Uffington seem to suggest mythical histories and an interest in features in the landscape that were already ancient, such as the White Horse. Thus, something fundamentally changed the ways in which places were remembered during later prehistory on the Berkshire Downs. Past concepts of history must be treated with caution, though. If rigidly interpreted, the Gosden and Lock model could inadvertently introduce dualism to what was likely a complex process of remembering, forgetting and re-remembering. Genealogical and mythical histories should be thought of as a continuum with grey areas, rather than a binary; at some point in time, genealogies would have become muddled and half-forgotten, and people would have filled in the gaps with stories. These stories would have relied on existing genealogical history to varying degrees, with some being more fanciful or radical than others. Ingold argues that the truth or untruth of a story is irrelevant:

> ‘Telling a story is not like weaving a tapestry to cover up the world, it is rather a way of guiding the attention of listeners or readers into it. A person who can 'tell' is one who is perceptually attuned to picking up information in the environment that others… might miss, and the teller, in rendering his knowledge explicit, conducts the attention of his audience along the same paths as his own.’
>
> (Ingold 1993: 153.)

These stories might have been created to suit particular agendas, or they may have been old stories rediscovered upon interaction with archaeological remains, or with other communities who still remembered. The past in the past was not static, and further study into the role of memory on the Yorkshire Wolds is needed to assess how people in the region understood their world throughout later prehistory.

2.5 Mapping landscapes, mapping stories: conclusions

This project attempts to develop a landscape biography which charts the development of the linear earthworks of the Yorkshire Wolds, and to explore the ways in which people interacted with the land around them at different times in later prehistory. In order to understand these landscapes, a wide range of data must be compiled, mapped and analysed within a theoretically-engaged, wider discourse on later prehistoric Britain. The following chapter outlines how the study has been conducted.

Chapter 3.
Learning from the land: materials and methods

To know a place fully means to both understand it in an abstract way and to know it as one person knows another.

Tuan 1975: 152

This project utilises a wide variety of materials in order to build up a picture of how the later prehistoric boundary systems of the Yorkshire Wolds were constructed, maintained and experienced. By combining GIS with the theories of landscape biography, agency and memory, a fuller picture of these boundaries can begin to emerge. The methods with which these approaches are employed are explained below. The most important—and most basic—aspect of this project is the land itself, so the geography and general character of the Wolds must be discussed in greater detail.

3.1 The lie of the land

As outlined in the previous chapter, any study of landscape must be aware of how people develop a sense of place, and how they experience places within that landscape throughout time. Tuan (1975: 152) eloquently says that '[t]o know a place fully means to both understand it in an abstract way and to know it as one person knows another'. This project attempts to know the Yorkshire Wolds in both of these senses by becoming acquainted with the geology, topography, history and present-day character of particular places within the wider chalk landscape. Essential to the understanding of a place is geography, which can be both physical and human. Physical geography concerns (among other things) topography, geology, ecology and land use. Human geography overlaps with the fields of history, anthropology, demographics, sociology and theology; when doing historical geography, biography and narrative are ideal tools with which to recount and understand the past.

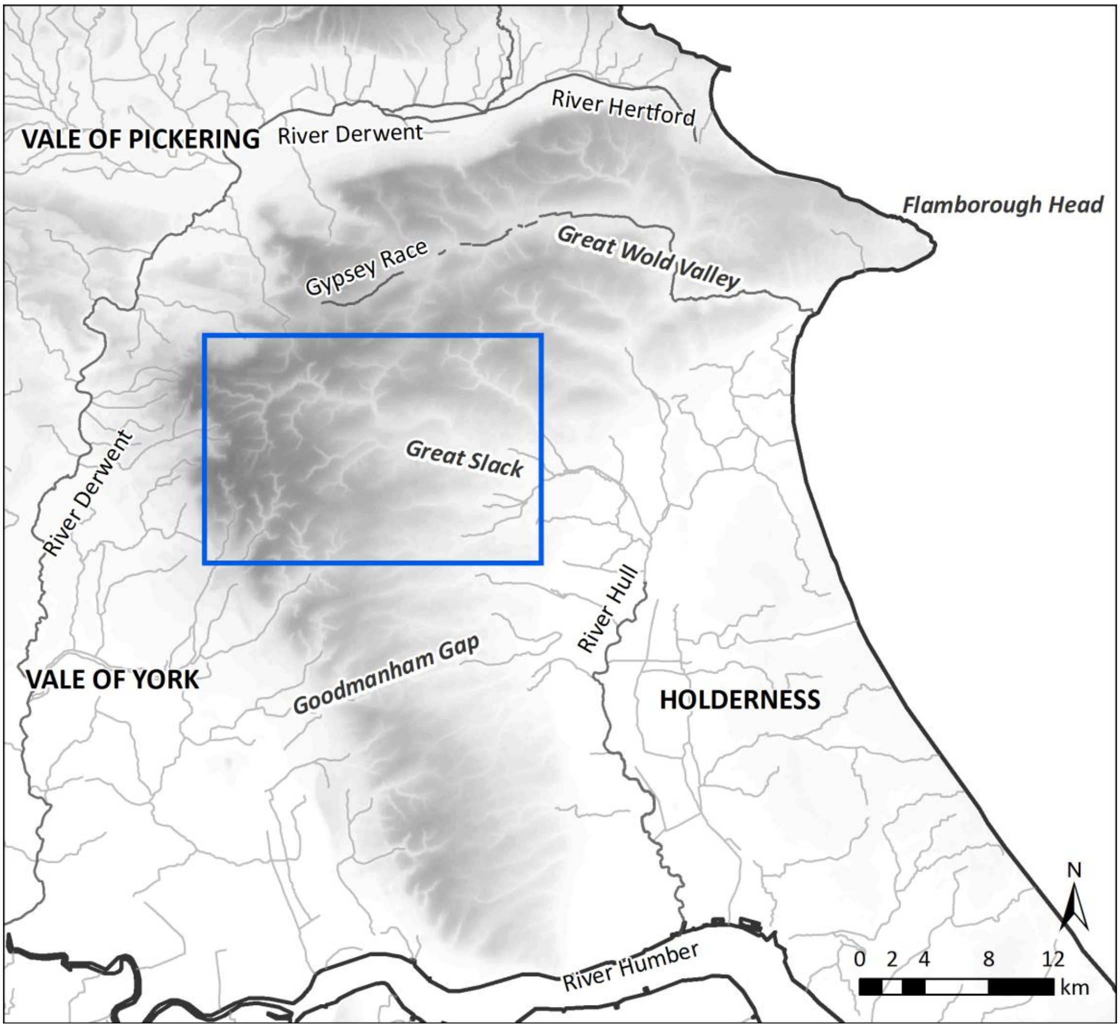


Fig 3.1 Physical geography of the Yorkshire Wolds
Blue box indicates the area covered by the case studies (Chapters 4-6). Contains Ordnance Survey data © Crown copyright.

3.1.1 Physical geography

The physical geography of the Yorkshire Wolds (Fig 3.1; summarised in Chapter 1) provides the backdrop for all work conducted during this project. Sections 4.2.3 and 6.4 explore the impact of topography—particularly that which has been enhanced or modified—on movement across and over the Wolds. The project also traces the history of specific boundaries in the landscape from their inception in prehistory, through the historic period and into the present day. This extended time depth does not imply continuity in meaning; rather, it considers how and why boundaries and beliefs about land division have changed through time.

Geology dictates potential land use, the ease or difficulty of performing particular activities in a place and the visual qualities of a landscape. The

Yorkshire Wolds are a crescent-shaped ridge of white chalk bedrock, and they largely lack superficial (drift) geology (Fig 3.2-3.3). Thus, the underlying chalk bedrock is directly below the soil. There are river terrace deposits in the Great Wold Valley around the Gypsey Race and the Great Slack (the latter so-called by Dent 2010; Halkon 2013: 44), and the eastern edge of the Wolds slopes gently down to meet Holderness, where it is covered by glacial till. Because of erosion due to intensive agriculture, the chalk is only centimetres below the topsoil in some areas of the Wolds (e.g. at Huggate Dykes, Fig 3.3). Within the seams of the chalk bedrock, flint is formed (Waddington 2004: 1-3) and springs can bubble up. Historically, chalk was used to construct houses and roads on the Wolds (Leatham 1794: 15; Mortimer 1978: 7). Chalk extraction pits are visible on the First Edition Six Inch OS maps (e.g. 1855, Sheet 160), and industrial-scale quarries have led to the excavation of sites such as Wetwang-Garton Slack (Chapter 5). Quarries and other cuts into the Yorkshire Wolds chalk are bright white until they silt up and vegetation re-grows. Therefore, if linear earthworks were regularly cleared of flora and debris in prehistory, and if the landscape was largely open, then they would have been highly visible in the landscape. The poor preservation of pollen on the Wolds, due to the nature of the region's geology, means that reconstructing the vegetation of particular landscapes within the region is difficult to achieve through palynological data alone (Fenton-Thomas 2003: 23; Neal 2010: 43). Molluscs and rare pollen grains do survive in the buried soils underneath prehistoric monuments, and thus ancient woodlands and cultivated areas can be inferred from the presence of particular species (Neal 2010: 45-46). The fact that the Yorkshire Wolds are called *wolds*, typically meaning 'wood' or 'wood-pasture' (from the Old English *wald*), does not necessarily mean that the region was forested when its place-names were recorded in the medieval period (ibid.: 30). Rather, this *wold* may derive from the Latin *gualdus*, a term for common land under royal control, or it may simply denote open tracts of land with a variety of different types of vegetation cover (Fenton-Thomas 2005: 79-80; Neal 2010: 30; Randall 2010: 85).

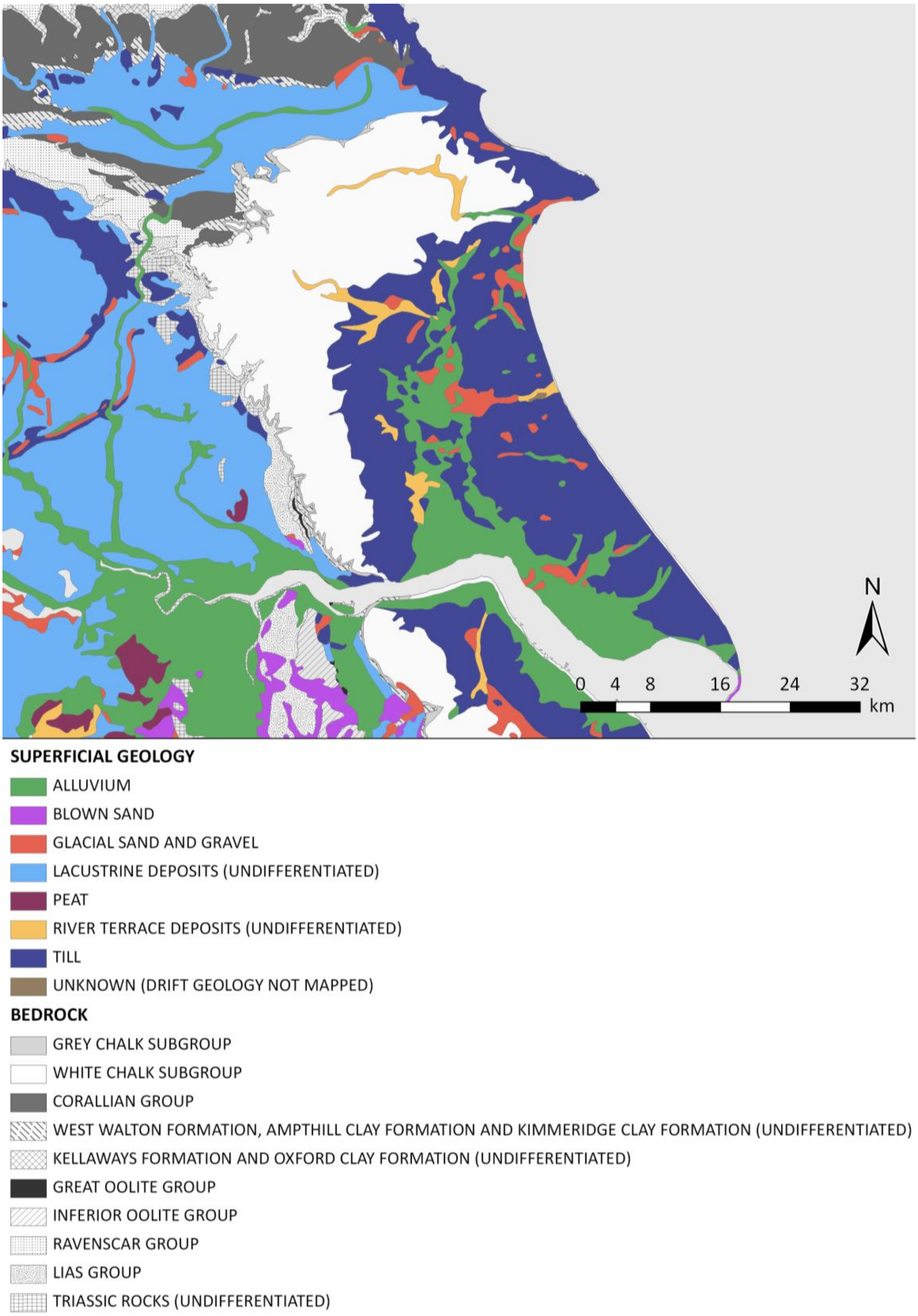


Fig 3.2 Geology of the Yorkshire Wolds and surrounding areas
Bedrock is shown in greyscale and superficial geology (drift) overlying bedrock is shown in colour. Contains British Geological Survey data. Reproduced with the permission of the British Geological Survey © NERC. All rights reserved.

Fig 3.3 Section of exposed chalk at Huggate Dykes
(Photograph: author)

The soils on the Wolds are generally free-draining and water easily permeates the chalk. The slopes have seasonal springs and streams, whereas at higher elevations settlement was historically concentrated around artificially-created ponds, locally called meres (Fenton-Thomas 2005: 18-19). At least some of these meres may have been present in prehistory (Fenton-Thomas 2005: 19). Previous studies have concluded that the linear earthworks of the Wolds may have controlled or led people and animals to fresh water (e.g. Sheppard 1922: 189; Fenton-Thomas 2005: 46-49; Halkon 2013: 54-56, Fig. 9). In addition to drinking water, later prehistoric people would have used the river systems around the Wolds for transportation. Halkon (2013: 46-51, Pl 6-7, 16) and colleagues have modelled the ancient coastline, rivers and marshes of East Yorkshire for various periods in prehistory, and their data suggest that the sea level around the Wolds rose enough for marine transgression at the Late Bronze Age-Early Iron Age transition, and by the Middle Iron Age, much of Holderness was underwater. Thus, Halkon argues that sites like Wetwang-Garton Slack on the eastern edge of the Wolds would have had easy access to the Humber Estuary and sea via the River Hull and its tributaries (ibid.: Pl 16). This project explores how water and other basic necessities would have affected movement through the landscapes of the Wolds. It attempts to understand geology and topography in terms of everyday experiences, such as farming and community identity, and asks how and why people so dramatically modified the chalk landscapes in which they lived.

3.1.2 Human/animal geography

Because linear earthworks are hypothesised to relate to patterns of human and animal movement (see Section 6.4), both reflecting and generating cosmologies, it is necessary to consider the connectedness which is likely to have existed amongst people, animals and places on the Yorkshire Wolds when linear earthworks were constructed and maintained. Looking to historic examples of how people and animals have inhabited the Wolds may help to contextualise the linear earthwork landscapes of prehistory.

From the medieval period until the Parliamentary enclosures of the eighteenth and nineteenth centuries, the main economy of the Yorkshire Wolds was mixed farming based on sheep and open fields of arable crops (Harris 1959[1966]; 1961: 14-35). Most of the farms found on the Wolds kept predominantly sheep, with cattle being the next important animals, followed by pigs, horses and rabbits (Harris 1961: 31-35). Livestock may have both practical functions and social or cosmological meanings for the people who raise them. Navajo sheep, for instance, are an essential source of meat and wool for their owners—the wool being woven into elaborate blankets which can be sold for profit—and they are also considered members of their owners' families, and are thus sometimes referred to as 'children' (Parezo 1996: 17; Weisiger 2009). Indeed, the raising of Navajo livestock is a family endeavour. Navajo people are allowed to own sheep from a young age so that they may learn good farming practices and build up their flocks (Weisiger 2009: 79-80); although women tend to manage more sheep than men do (ibid.: 97), and men tend to have more cattle and horses, everyone participates in the pastoral economy that defines Navajo identity. Randall (2010) has explored the ways in which people, animals and landscapes would have interacted in prehistoric south-west Britain. She identifies the need for a distinction between pastoral and arable farming activities when interpreting agricultural landscapes, arguing that although fields are often interpreted as the locations of crop production, '[b]oundaries are more necessary for livestock husbandry than arable cultivation' (ibid.: 86). Although Randall (ibid.: 101) concludes that linear earthworks may not have functioned as stock enclosures or barriers at a localised level (she argues that linear earthworks are more likely to relate to larger, conceptual landscape divisions), if the livestock of the later prehistoric Wolds were hefted to particular places and actively herded by people (as suggested by ibid.: 97), then the earthworks would not necessarily need to be barriers. The acts of herding sheep and driving cattle to water would forge close bonds between people and the land; they would need to know it well, and it seems plausible that they would have created myths and legends to explain it.

The rural character of the Yorkshire Wolds features in the 28th song of Michael Drayton's *Poly-Olbion* (Drayton 1622: 139-150, plate preceding 139). Literally meaning 'Multi-Britain', the *Poly-Olbion* is a topographical poem issued in two volumes that describes the various counties of Britain. The speaker of the poem, a muse, travels geographically across the country, naming the principal landforms, cities, historical figures and legends within each county. Although the poem was written in the seventeenth century, some of its myths are far older. For example, Humber, King of the Huns (Drayton 1622: 149) is a character from Geoffrey of Monmouth's twelfth-century *Historia Regum Britanniae* (c. 1136 [1966]). It is conceivable that some of the beliefs associated with the landscapes of the *Poly-Olbion* could have parallels, if not roots, in later prehistory.

Places in the *Poly-Olbion* are given specific characters (henceforth referred to as 'place-characters'), who are described in the text and illustrated on a series of maps. Many of the place-characters within the 28th song are nymphs and maidens. These include Halifax, a virgin who was beheaded by her lover (Drayton 1622: 140), and the ebbing and flowing Giggleswick spring, a nymph who was chased by a satyr until she could not catch her breath (Drayton 1622: 142). The place-character for the Yorkshire Wolds is a shepherd or shepherdess (Fig 3.4) and the poem notes the region's flocks and 'pastorall grace' (Drayton 1622: 147). The East Riding is given a different character than the West and North Ridings. Whereas the West (Drayton 1622: 140-143) is portrayed as wild and awe-inspiring, and the North (Drayton 1622: 143-147) seems haughty and grand, the East (Drayton 1622: 147-150) is gentle and ruled by the regal Humber, who ultimately claims control over the rest of the county (Drayton 1622: 149-150). The supremacy of the Humber in the poem highlights its crucial role in the physical and human geography of Yorkshire. With major rivers from all three Ridings flowing into it, and providing access to the sea, the Humber Estuary would have been essential for historic—and by extension, prehistoric—travel and trade.

In addition to having histories and personalities, the place-characters of the *Poly-Olbion* are gendered. Rivers, streams and springs are personified as female, with one exception; the Humber is male (Drayton 1622: 149-150). Female water characters offer fertility and motherly care, such as the marshes north of Doncaster, 'whose swolne wombe with such abundance flowes' (Drayton 1622: 140), and the River Wharfe, who 'watreth *Warfedales* breast, which proudly bears her name' (Drayton 1622: 141, emphasis original). In the text, the Wolds (or 'Ould') are personified as a man:

> 'Which brauely I suruey; then turne ye and behold
> Vpon my pleasant breast, that large and spacious *Ould*
> Of *Yorke* that takes the name, that with delighted eyes,
> When he beholds the Sunne out of the Seas to rise,
> With pleasure feeds his Flocks, for which he scarse giues place
> To *Cotswold*, and for what becomes a Pastorall grace,'
>
> (Drayton 1622: 147, italics original.)

This contrasts with the map (Fig 3.4), where the Wolds appear to be a woman, with female breasts and a long skirt. Regardless of whether the Yorkshire Wolds were intended to be male or female in the poem, the gendered place-characters of the *Poly-Olbion* remind us that the personification of place involves the creation of identities, which may or may not have parallels in their contemporary societies. Ethnographic examples of personified, gendered places include those of the Western Apache (see Chapter 2 for a full discussion). Apache places and place-names may draw upon the stories of mythical beings, deceased relatives or distant ancestors (Basso 1996), all of whom pass on wisdom. In the cases of both the *Poly-Olbion* and the Western Apache, places have distinct identities and consequently, as place-characters, they are given some degree of agency.

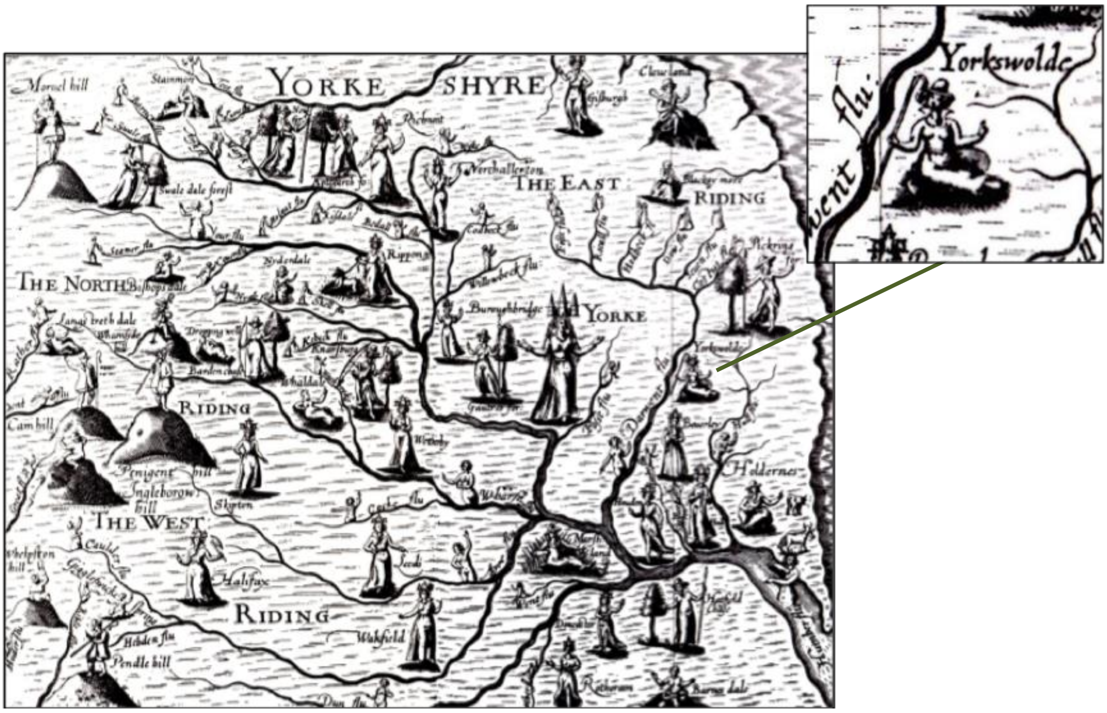


Fig 3.4 Yorkshire Wolds as a shepherd or shepherdess
A marriage of physical and human geography, Drayton's *Poly-Olbion* describes the topography, legends, histories and overall characters of the counties of Britain. Yorkshire appears in the second part (Drayton 1622: 28th song, reproduced in Whitaker 1933[1971]: Pl. VII). Inset shows detail of the Yorkshire Wolds, or Yorkswolde, as a seated shepherd or shepherdess.

Perhaps one of the most difficult aspects of creating a biography of landscape is to determine what, if any, power people afforded to that landscape. People may interpret the world around them in a multitude of ways, such as through scientific logic, religious belief or a combination of the two. Superstition and belief in magic are documented on the Wolds into the nineteenth century. Folklore held that if the Gypsey Race should overflow, that was a sign of drought in the year ahead (Drayton 1622: 150; Tait 1888: 6-7). Mortimer (1978: 8-9) recalls how everyone in the village of Fimber believed that their neighbour, an old woman called Rachel Kirby, was a witch. She was thought to shape-shift into animal form, and on one occasion the village was convinced of her guilt after a hare dashed into a house and Mrs Kirby was found out of breath shortly thereafter. The villagers also believed in bad omens, such as a dog howling outside the house of someone who was ill (thought to herald death; Mortimer 1978: 9). The world in which Mortimer and his neighbours lived was an uncertain place, where people and animals may not always have been what they seemed. Similarly, various places on the later prehistoric Yorkshire Wolds would have been imbued with meanings and emotions, ranging from superstition to fear to being at peace in one's own home. By drawing upon historical, anthropological and literary sources, we can consider the wide variety of ways in which people give the land agency. If we understand how the land shaped people, and vice versa, we can begin to build up a picture of their identities.

Far from being 'dead' places, many linear earthworks are still in use today. Some are still upstanding, functioning boundaries; for example, at Huggate Dykes the various branches that split off to west form the parish boundaries of Huggate, Millington and Bishop Wilton and Belthorpe (see Section 6.1). Other earthworks have been ploughed away but their ghosts are still lingering beneath the ground, waiting to be uncovered through geophysics or excavation (e.g. at Melton; Fenton-Thomas 2011). This project takes a deep-time approach to monuments and considers their extended, if often discontinuous, lives. Re-evaluation of antiquarian sources (e.g. Mortimer 1905) is worthwhile, as it allows us to trace changes through time—changes to both the monuments themselves and to our interpretations of them.

3.2 Materials and methods

This project uses desk-based research and targeted fieldwork to develop a biography of the linear earthwork landscapes of the later prehistoric Yorkshire Wolds, and interprets these earthworks in the context of memory and agency. Switching between nested scales of analysis (macro-, meso- and micro-scale), the project builds up biographies of two case study areas, Wetwang-Garton Slack and Huggate Dykes, and then attempts to tell the story of boundaries on the Wolds as a whole. Finally, the earthworks of the Yorkshire Wolds are contextualised within British and European later prehistory. The materials used by this project range from records held by the Sites and Monuments Record (SMR) in Hull, to publications freely available to all, to original data compiled by the author. The land itself is the most important material, as it provides both original data and a backdrop against which to examine all other evidence.

3.2.1 Antiquarian, literary and archival sources

The first sources that the project drew upon were antiquarian and twentieth century archaeological surveys and excavations. It re-evaluated and synthesised existing records of linear earthworks and, informed by these records, a classification system was developed (see Section 4.2.2). The maps created by Mortimer (1905) and Stoertz (1997) formed the core of the project's data set, and they were complemented by Ordnance Survey maps. Using map regression from the First Series to modern OS maps, which were available online from the National Library of Scotland and Edina Digimap, individual earthworks could be traced through the nineteenth and twentieth centuries. By comparing the same earthworks on maps of different editions, the project was able to pinpoint destruction due to ploughing (as at Huggate Dykes) and new archaeological discoveries (as at Wetwang-Garton Slack).

In addition to maps and surveys of linear earthworks, the project utilised archival materials from the Wetwang-Garton Slack excavations of the 1960s to 1980s (Fig 3.5). Although several interim publications were produced (Brewster 1971 and 1980; Dent 1982, 1983, 1984 and 1985), and although the results of the excavations have been frequently studied in recent years (e.g. Dent 2010; Giles 2012; Jay et al. 2012), there is currently no comprehensive publication for the entire settlement-cemetery complex. The Wetwang/Garton Slack Project archive, which is presently curated by the University of Bradford, provided access to section drawings, plans, photographs and databases. These materials offered high-resolution data for the linear earthwork at the heart of the site—such as ditch fills and associated artefacts—as well as insight into how it was excavated.

Fig 3.5 Plate showing Garton Slack 7 square barrow cemetery
The square barrows and linear earthwork are being encroached upon by the quarry. Appears as Brewster 1980: Pl 38. Archival copy courtesy of Wetwang/Garton Slack Project.

3.2.2 GIS

This project employed Geographic Information Systems (GIS) to organise, visualise and mathematically analyse data. Using Esri ArcMap (Esri ArcGIS version 10.1; see Appendix A), maps and plans were georeferenced—tied to their correct geographic positions—using the British National Grid and Ordnance Survey shapefiles as references (Fig 3.6). The archaeological features were then digitised; shapefiles were created for each feature class (e.g. linear earthwork, pit alignment) and points, polylines and polygons were drawn to correspond with the maps and plans. Features were digitised at three resolutions: low quality (LQ) at landscape- or macro-scale; medium quality (MQ) at site- or meso-scale; and high quality (HQ) at feature- or micro-scale (Table 3.1; see also Chadwick 2013 for a commentary on scales of analysis). It was beyond the scope of this project to digitise the entirety of Stoertz's (1997) corpus at medium resolution, so a sample of earthworks on the north-central Wolds were selected for this scale. The remainder of the earthworks from that publication were digitised at low resolution. High-resolution data included archival plans from Wetwang-Garton Slack and original geophysical data. These different scales are discussed in Section 4.2.1 and Chapters 5-6.

Scale	**GIS Resolution**	**GIS Data Sets**	**Types of Information**	**Archaeological Questions/Themes**
Macro	Low (LQ)	• Stoertz (1997: Fig. 33 *inter alia*)	• Regional/local patterns • Broad alignments	• Social/political/ economic/ cosmological organisation • Experiences of the land • Context for sites/smaller places
Meso	Medium (MQ)	• Stoertz (1997: full OS maps) • Mortimer (1905: foldout map at front of volume) • OS maps	• Site plans • Inter-site/inter-line relationships • General earthwork morphology (number of banks and ditches)	• Biographies of landscape • Experiences of the land • Local, interpersonal relationships (e.g. amongst neighbours/kin) • Responses to topography
Micro	High (HQ)	• Site plans (e.g. Mortimer 1905: Pl. C Fig. Ee) • Archival materials (Wetwang/Garton Slack Project) • Google Earth satellite imagery • OS maps	• Site/feature plans • Intra-site relationships • Stratigraphic relationships • Detail of banks and ditches • Myths/place-names/anecdotes	• Biographies of place • Experiences of the land • Creation of homes • Inter-generational use of the land • Survey/excavation histories

Table 3.1 Multi-scalar approach to GIS data sets

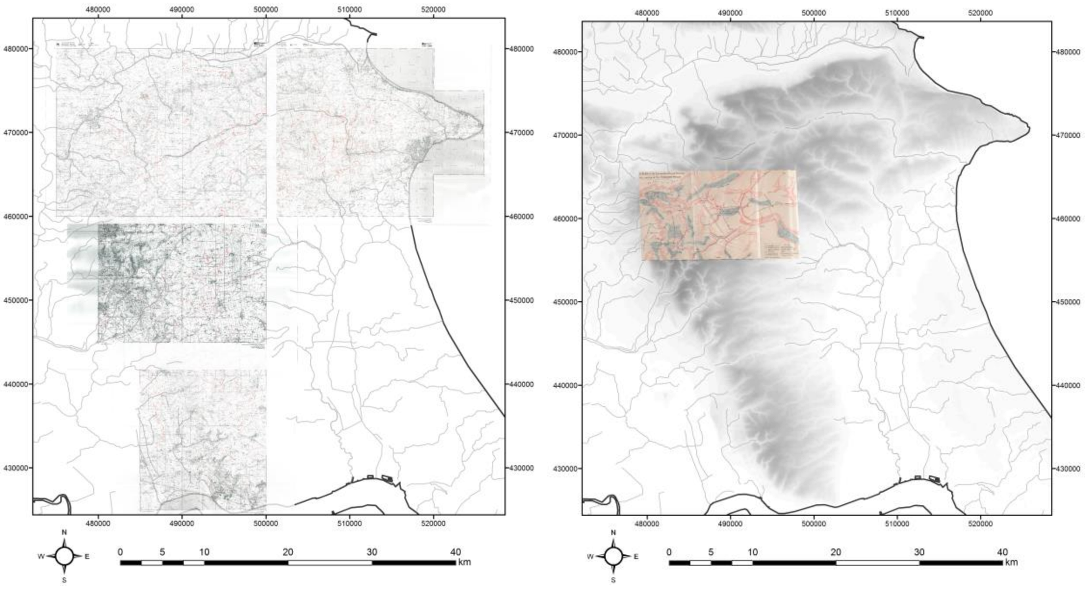


Fig 3.6 Georeferenced maps
Maps from Stoertz (1997) and Mortimer (1905). Contains Ordnance Survey data © Crown copyright.

All data and basemaps were organised as layers in a master GIS, a copy of which is provided as Appendix A. This served as a database in which to store not only spatial data, but also citations and notes about particular earthworks and related features. One downside of the master GIS was that it was too large to use the built-in Esri ArcGIS satellite imagery successfully. The map document required significant computing power, and it was not feasible to activate the satellite imagery basemap, which was not local to the computer but stored online by Esri. Thus, site-specific GISs were created for Huggate Dykes and Wetwang-Garton Slack. These map documents contained only relevant layers and were small enough in file size to display satellite imagery as a basemap. The advantages of using satellite imagery in archaeology are explained below. More complex modelling (e.g. least cost analysis) was performed in a fourth GIS with even fewer layers in order to maximise the computing power available for the project and to preserve the layer structure of the master GIS.

Digital Terrain Models (DTMs), vector datasets (e.g. rivers, coastlines), geological maps and historic Ordnance Survey maps were sourced from Edina Digimap, a digital mapping resource based at the University of Edinburgh. As LiDAR data were not available for the Yorkshire Wolds, the Digimap Ordnance Survey DTMs provided the most detailed topographic information for the region of study. For the majority of the project, the highest resolution DTMs which could be obtained were at 50m resolution (initially Land-Form PANORAMA®, released in June 2006, and then OS Terrain 50, released in July 2014). Thus, the analyses presented up to and including Chapter 5 were conducted at this resolution and are illustrated using these DTMs. In April 2015, a 5m DTM (OS Terrain 5) was released by Digimap, which allowed for the visualisation and analysis of more subtle changes in terrain. The 5m DTM was used for the least cost modelling presented in Chapter 6, but there was not sufficient time to repeat the earlier work which had used the 50m DTM. Spot checks comparing linear earthworks against the two DTMs suggested that the results presented in Chapter 4 would have been largely the same, and that differences in the heights or slopes of particular earthwork segments would be negligible.

Once data collection and digitisation had been completed, manual and mathematical analyses were performed in the master GIS. Manual analysis included the categorisation of earthwork segments, as detailed in Chapter 4. A database of categorised earthworks was compiled in a Microsoft Excel spreadsheet. Mathematical analyses executed in ArcMap include slope analysis (to determine which features are located on flat versus steep ground) and viewshed analysis (to determine which parts of a landscape can be seen from a given observation point). Both of these were used to examine the visibility of particular linear earthworks within the wider landscape, and they were tested and complemented with virtual walkthroughs on 3D globes (Esri ArcGlobe and Google Earth; see Chapters 5 and 6) and site visits.

Appendix A contains the master GIS saved as a series of layer packages, which should enable ArcGIS users to open and use the data. The digitised earthworks are also provided as a KMZ file (Appendix A), which increases the likelihood of compatibility with other computers and spatial applications (e.g. Google Earth for mobile phones).

3.2.3 Remote sensing

This project draws on four areas of remote sensing: aerial photography, satellite imagery, topographic survey and geophysics. The large majority of aerial photographs relevant to the area of study were transcribed by Stoertz (1997); these data are presented in the form of a monograph with four detailed maps. New photographs have been taken since that publication (e.g. Halkon 2010; Fig 3.7). They have been examined in conjunction with satellite imagery, which was available via Google Earth (Fig 3.8) and Esri ArcGIS (ArcMap and ArcGlobe). Problems caused by attempting to use Esri satellite imagery within the large master GIS map document file have already been mentioned. To avoid this, smaller map document files were made for individual sites. Overlaying the satellite basemap with GIS layers helped to a) confirm whether or not features had been transcribed accurately in the correct location, and b) put features into a wider landscape context. Although the Esri satellite imagery was sufficient for these purposes, it was sometimes difficult to use because it was slow to display. More convenient for the project was Google Earth satellite imagery, which was freely available and which provided good coverage of the Yorkshire Wolds. As older satellite data were accessible from the Google Earth desktop application, images from various years could be easily compared, and features that might only be visible after particular weather conditions or in certain crops were more likely to be discovered. The images overlay a 3D model of the Earth and could be viewed from multiple angles and altitudes, which aided the identification of cropmarks. Using the Google Earth desktop application, the fields surrounding Huggate Dykes and Wetwang-Garton Slack were systematically examined for archaeological cropmarks. Features were digitised in the same manner as with ArcGIS (points, polylines/paths and polygons) from a vertical, not oblique, angle. These digitised features were then exported to KMZ files, converted to layers in ArcMap and displayed alongside existing data. Conversely, GIS layers were often converted to KMZ files for display in Google Earth, both for use as data collection reference points—for locating and assessing new cropmarks—and for visualisation.

Fig 3.7 Aerial photograph of Huggate Dykes
Looking S towards the upstanding banks and ditches. Taken by P Halkon on 08 August 2010. Reproduced with permission, courtesy of P Halkon.

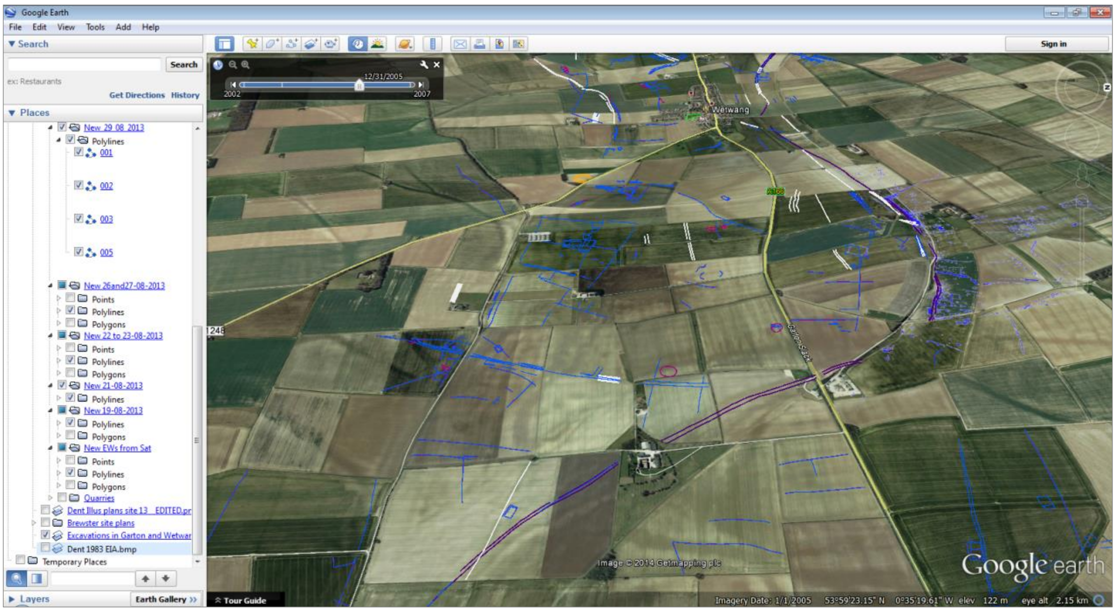


Fig 3.8 Screenshot of Google Earth desktop application, Wetwang-Garton Slack
Looking W over digitised features around the site of Wetwang-Garton Slack. Contains data after Stoertz (1997) and Dent (1983). Contains Ordnance Survey data © Crown copyright. Satellite imagery courtesy of Google and associated partners.

Original geophysical surveys were undertaken at Huggate Dykes (Table 3.2 and Fig 3.9). The fieldwork employed the techniques of magnetic gradiometry, earth resistance (resistivity) and electromagnetic induction (conductivity and magnetic susceptibility). Three areas of the site were surveyed according to standard practice (Table 3.2). The full survey report is included as Appendix D and the results are discussed in Section 6.3.4. The geophysical surveys offered meso- to micro-scale information, including a potentially different ditch fills and morphologies, which seems to suggest multi-phased construction and modification of the monument. The surveys also helped to resolve discrepancies amongst historic Ordnance Survey maps, which depict the monument slightly differently from one edition to the next, and aerial photographs, such as those transcribed by Stoertz (1997).

Technique	**Instrument**	**Grid Size**	**Traverse Interval**	**Sample Interval**	**Areas**
Magnetic gradiometry	Bartington Grad 601-2	20m	0.5m (Grids 1-9) and 1m (Grids 10-39)	0.125m	1
	FM256 Fluxgate Gradiometer*	20m	0.5m	0.125m	2
Earth resistance	RM85 Twin-Probe	20m	0.5m	0.5m	1-2
	RM15 Twin-Probe	20m	0.5m	0.5m	3
Electromagnetic induction	CMD-MiniExplorer	20m	1m	0.2s (5 readings/s $\approx$ 0.333m)	1, 3

**Abandoned due to instrument failure and difficulty of terrain*

Table 3.2 Geophysical surveys carried out at Huggate Dykes

Fig 3.9 Geophysical fieldwork at Huggate Dykes
Clockwise from top left: preparing for survey in adverse weather conditions; conducting a resistance survey on the flat eastern half of the monument; conducting a resistance survey on the upstanding western half of the monument. (Photographs: author)

Fig 3.10 Site visits to Huggate Dykes through the seasons
Clockwise from top left: first site visit, July 2012; Iron Age Research Student Symposium field trip, led by Dr Peter Halkon, June 2013; preparing for topographic survey, December 2013. (Photographs: author)

3.2.4 Site visits

The project has involved repeated visits to the landscape of interest, which were useful for in-the-field characterisation of features, such as the morphology of surviving banks and ditches, or the ease of movement around and across particular segments of an earthwork. These characterisations could then be compared with desk-based characterisations, and the latter were revised as necessary. Some site visits were made without any intention of studying the landscape scientifically; rather, they were intended to be casual encounters with a given place. Following the example of MacDonald's study of Taigh Mòr, the project relies first and foremost on the land itself:

> 'But I'm not sure that I thought of myself as doing 'fieldwork', at least not in the beginning… I simply wanted to know what took place here and hoped, often forlornly, that the house might tell me.'
>
> (MacDonald 2014: 480)

Like the Taigh Mòr study, this project asked questions of places. To complement the project's desk-based and geophysical components, site visits served as opportunities to observe the landscapes of the Yorkshire Wolds in different seasons, and to inspire questions about movement, control of land and place-making. Simply being in the landscape has helped to forge a sense of connection between the author and the enigmatic linear earthworks that stretch across the Yorkshire Chalk.

Site visits were informed by phenomenology, which has so deeply pervaded post-processual studies of (land)scapes. One great strength of phenomenology is that it forces the researcher to reflect on observations that may be, in some instances, so subtle that he or she might otherwise overlook them. For example, during a casual visit to Huggate Dykes in the summer of 2012, the author conducted an impromptu phenomenological study whilst walking along a damp stretch of ground (Appendix E). This helped to crystallise ideas in her mind, and she reflected on: the permeability of chalk; past people's experiences of weather and climate; and the experiences of animals in an agricultural landscape. Phenomenology encourages us to know a landscape as Tuan (1975: 152) instructs, and it helps to fill in the gaps in the stories that we tell. Although our present-day experiences of landscape cannot be the same as those of prehistoric people—for that would require uniformitarianism in the extreme—it is worthwhile to consider how landscapes affect us, and which of those effects are likely to have existed across deep time. By telling stories with experiential techniques in mind, we can write more complete biographies of place and better understand the past.

3.3 Learning from the land

This project proposes to write the life histories of linear earthworks on the Yorkshire Wolds by drawing together a variety of sources, including maps, archival materials, satellite imagery and original fieldwork results. The strategy outlined above allows the project to maximise the strengths of both data-heavy analyses and more theoretical approaches. It affirms the importance of local and regional emphases, from the micro- to macro-scale, when attempting to tell a grand narrative (e.g. the British Iron Age). It asks how and why the linear earthworks of the Yorkshire Wolds developed, as well as what they may have meant to the people who experienced them. By focussing on a specific case study area and becoming intimately acquainted with it, the project's intention is to write an honest and thorough biography of that landscape.

Chapter 4.

Organising the world: the creation of monumental landscapes

> *Certainly the last two centuries have erased the greater portion of the entrenchments which once existed, and time has quite obliterated their history. Still, a careful examination of the magnitude and structure of those remaining, of the methods adopted in connecting one section with another, and of the arrangements which were originally made to give ingress and egress to the interiors of the ditches and to the areas enclosed within their lines, will probably assist in partly making out the purpose for which they were constructed.*
>
> *Mortimer 1905: 369*

This chapter addresses the creation and monumentalisation of places on the Yorkshire Wolds. It explores how the people who created the linear earthworks during the Late Bronze Age and Iron Age (Fig 4.1) would have re-interpreted and re-negotiated Neolithic and earlier Bronze Age landscapes, drawing on the distant past to create new identities and cosmologies. Using a multi-scalar approach, the project's GIS data sets are presented at the macro and meso levels. From those data sets, case study alignments are classified and analysed. These broad-scale discussions of earthworks and bounded landscapes set the stage for the detailed, micro-level stories of Wetwang-Garton Slack (Chapter 5) and Huggate Dykes (Chapter 6), providing a contextual framework within which to situate them.

4.1 Place-making in prehistory

Before we can begin to understand linear earthworks (Fig 4.1), it is essential to examine the landscapes in which they were created. By the Late Bronze Age, the Yorkshire Wolds would have been full of already-ancient monuments, to which myths, superstitions, genealogies, political claims and personal emotions would have been attached. From their initial construction, linear earthworks would have become equally charged with intangible qualities, building upon and renegotiating—if not, in some cases at least, usurping—established beliefs and conventions about particular tracts of land.

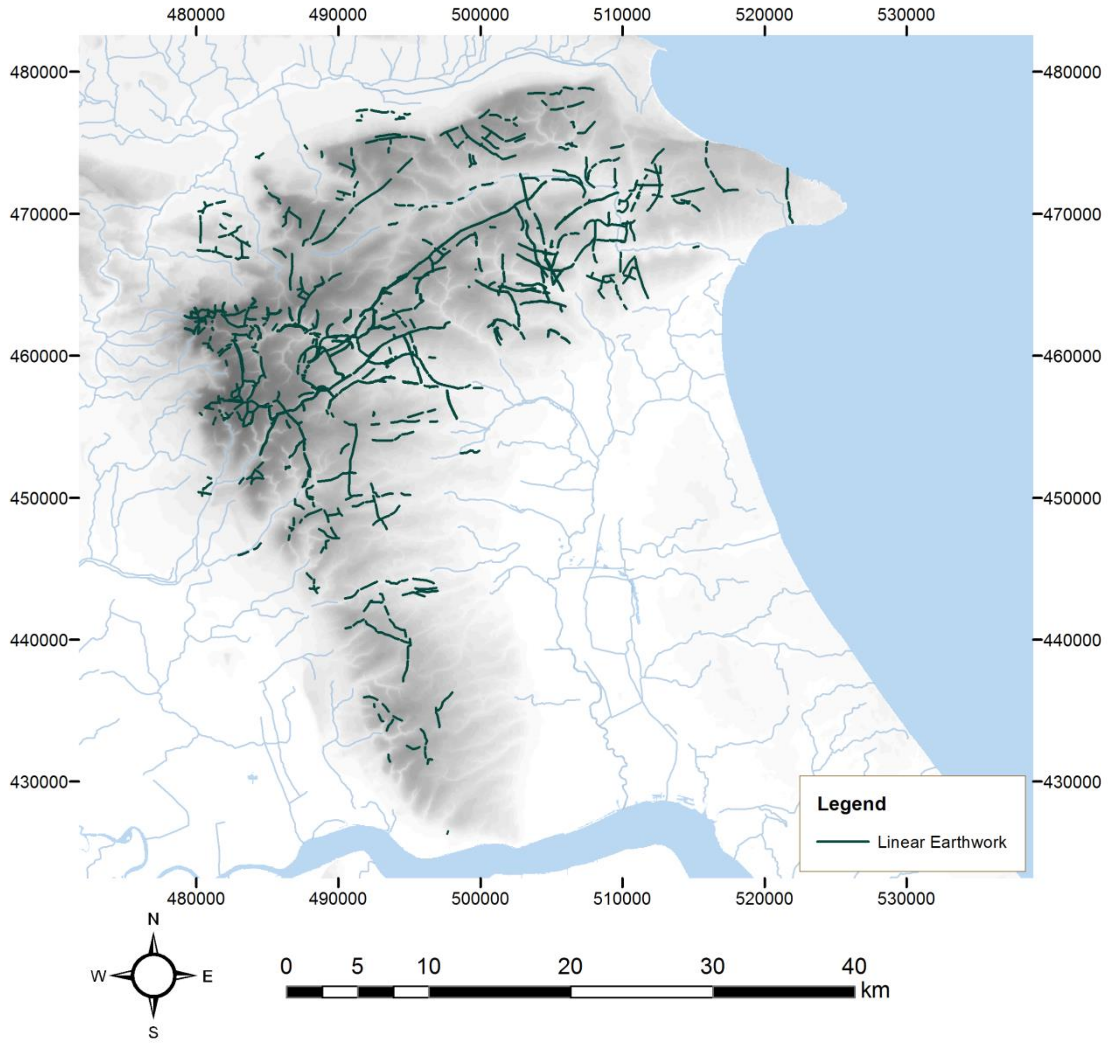


Fig 4.1 Linear earthworks analysed in Chapter 4
Data after Mortimer (1905), Stoertz (1997), Fenton-Thomas (2011) and original work. Contains Ordnance Survey data © Crown copyright.

4.1.1 Before the lines: earlier monuments

Place-making is a social process that sets a space or location apart from everywhere else around it; to do this, the location in question must have distinguishing characteristics that delineate it from elsewhere (see Chapter 2). As demonstrated by Basso's (1996) work on Western Apache places, these distinguishing characteristics may be physical attributes (e.g. trees) or abstract constructs (e.g. myths). Physical attributes can be natural, anthropogenic or a combination thereof, and they are easier to map archaeologically than their abstract counterparts. Traditionally, it has been argued that the monument construction boom of the Neolithic heralded a new way of creating places and experiencing landscapes in Britain (e.g. Bradley 2007; for discussion and argument against, see Sturt 2006). However, recent investigations into pit alignments, such as those at Warren Field in Aberdeenshire (Gaffney et al. 2013), have suggested that people were already constructing special places through the use of monumental architecture in the Mesolithic. In the absence of clear evidence for Mesolithic monuments on the Yorkshire Wolds, this study can only hypothesise that the people who constructed the earliest Neolithic monuments would have been remembering, expanding upon and/or subverting Mesolithic concepts of place. The Neolithic and Early Bronze Age landscapes of the Yorkshire Wolds would have been dominated by monuments, especially those of a funerary nature. The chalk slopes were populated with the dead, and by the Middle to Late Bronze Age, these monuments would have acquired new meanings through the attribution of myths and practical functions (e.g. route-markers). This chapter explores how these already-ancient monuments could have fundamentally shaped how people laid out linear earthworks from the Late Bronze Age onwards, giving the new boundaries deep history and social legitimacy.

It is possible that the people who constructed the linear earthworks of the Yorkshire Wolds were familiar with the Neolithic cursus monuments of the region (Fig 4.2). With a low bank flanked by parallel ditches cutting into the chalk (Fig 4.3), the visual impact of a cursus monument and that of an eroded linear earthwork would be strikingly similar. The only confirmed cursus monuments on the Wolds are the four located at Rudston in the Great Wold Valley, centring on the Rudston Monolith (Fig 4.4; Stoertz 1997; Harding 2006; Dent 2010). The Rudston Monolith (Fig 4.5) is, according to folklore, the ‘grandmother of the church’ that stands next to it (Grinsell 1937: 252), and the juxtaposition of the two monuments represents a clear episode of landscape renegotiation. Together with the monolith and a cluster of henges and long barrows, the cursus monuments mark the place where the Gypsey Race briefly changes direction (from east to south, and then east again; compare this special or ceremonial landscape with the monument complex at Thornborough, North Yorkshire, Harding 2008). Chapman (2003) demonstrated that the

Woldgate Cursus, the south-easternmost of the group, had clear visual links to the Rudston and Denby long barrows. This visual relationship could be indicative of a conceptual link between these two monument types. The Rudston cursuses and their neighbouring long barrows may have been constructed where they were in order to mark out a particularly significant zone within the landscape, but whether that zone was socioeconomically important to the monuments' creators—i.e. delineating an area of land that belonged to them—or purely ritual in nature is speculative. Regardless of the cursus monuments' intended meanings, the people who might have encountered them in the Late Bronze Age would have reinterpreted their function and perhaps their origins, and they might have inspired new monument-building in the area. The Rudston landscape was later embellished with a dense concentration of linear earthworks, suggesting that the Neolithic monuments were experienced and renegotiated by generations throughout the Neolithic, Bronze Age and Iron Age. However, although it seems plausible that the later monuments and boundaries (i.e. pit alignments and linear earthworks) were responses to the presence of earlier monuments (i.e. cursus monuments and long barrows), it is possible that the people inhabiting this area in later prehistory did not recognise the cursuses as being important. Rather, the natural landscape could be the impetus for continued monument-building. The persistence of the Rudston complex is perhaps best explained because of its location at a distinctive point in the course of the Gypsey Race. Whilst the stream's course changes slightly from year to year, its position at Rudston is constant. Similarly unpredictable is the stream's volume; some years it remains almost entirely underground, and others it overflows its banks (see Section 3.1.2). To the people living on the Yorkshire Wolds in prehistory, the Gypsey Race would have been a powerful force, so it seems reasonable to assume that this section of it would have remained particularly important for millennia. Studies of cursus monuments elsewhere in Britain have suggested a close relationship with water sources (e.g. Barclay et al. 2003), so the Rudston cursus complex, with its later additions and modifications, perhaps represents part of a larger, long-lived cosmological trend intimately tied to agriculture. An emphasis on water would hardly be surprising for farming communities, as crops and livestock would require a reliable supply. Even if the majority of people living on the Wolds had access to springs or dew-ponds closer to their homes, the Gypsey Race could have been an indicator of the overall state of water within their world, and thus it would have held symbolic meaning.

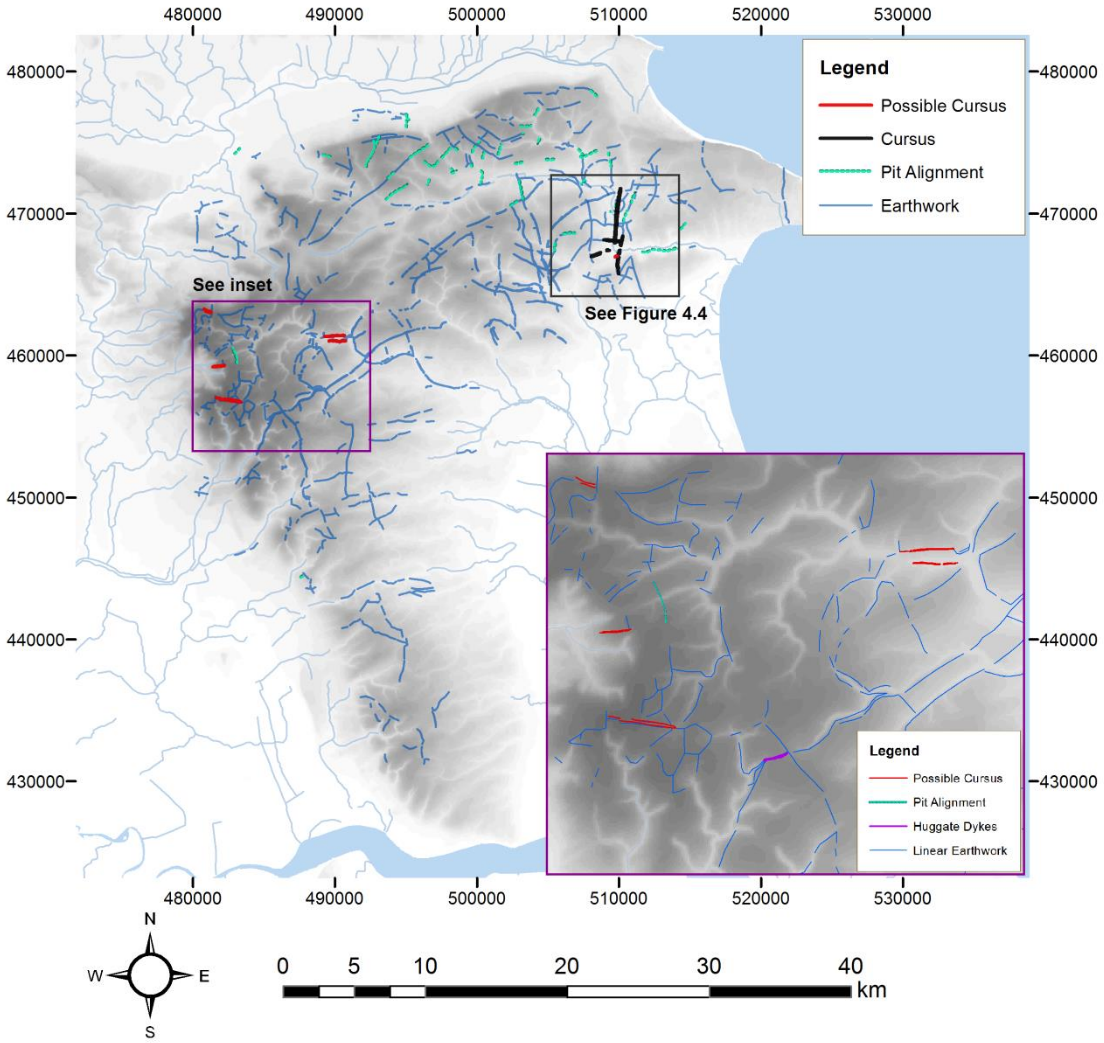


Fig 4.2 Cursus monuments and pit alignments on the Yorkshire Wolds, with inset showing possible cursus monuments and pit alignments around Huggate Dykes
Data after Stoertz (1997). Contains Ordnance Survey data © Crown copyright.

Fig 4.3 Stonehenge Greater Cursus
Snow collecting in the ditches gives an impression of freshly excavated chalk. (Photograph: author 2010)

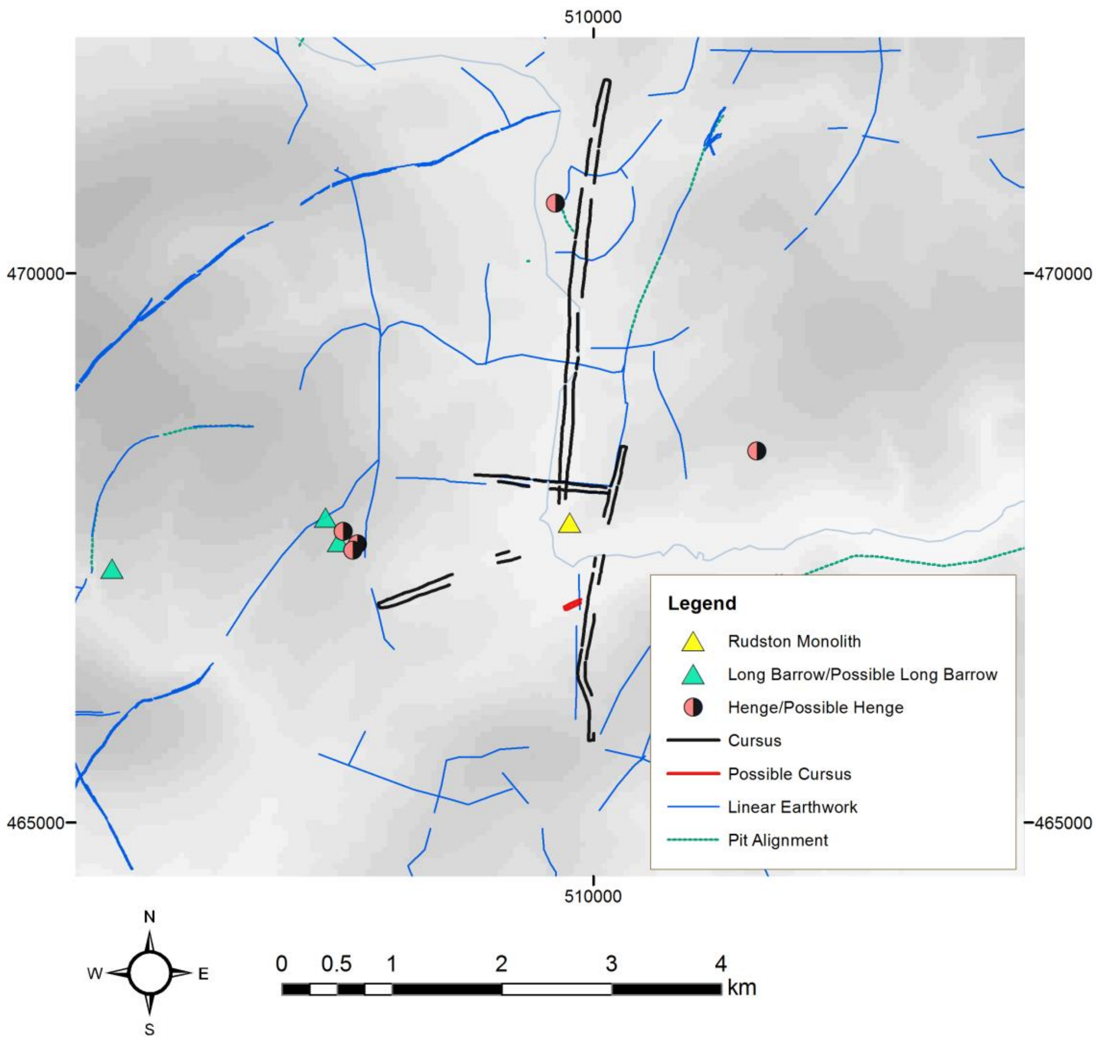


Fig 4.4 Cursus monuments around Rudston, in relation to other prehistoric monuments
Extent shown on Fig 4.2. Data after Stoertz (1997). Contains Ordnance Survey data © Crown copyright.

Fig 4.5 Rudston Monolith
Renegotiation of the landscape is evident in the placement of a church immediately adjacent to the monolith. (Photographs: author 2011).

Pit alignments also cluster around the Gypsey Race (Fig 4.2 and 4.4), adding weight to the idea that the Great Wold Valley and the water available there were being deliberately augmented with monuments. Many of the pit alignments mapped by Stoertz (1997) would have pre-dated linear earthworks; some of the best-understood examples are those around Rudston (Harding 2006), which date to the Neolithic. However, the pit alignments of the Wolds probably do not represent a single feature type—i.e. some may have held upright stones or posts, and others may have only ever been cut features—and they are known to date from the fourth millennium BC through to the first millennia BC/AD—compare the Neolithic Rudston pits (Harding 2006) or the Neolithic/Early Bronze Age Thornborough double pit alignment (Harding 2008: Fig 11) with the Iron Age or Roman pit or post alignments at Melton (Fenton-Thomas 2011, see below). Pit alignments dating as far back as the Mesolithic have been found elsewhere in Britain, as at Warren Field (Gaffney et al. 2013), and if monuments of this age were still recognisable in the landscape in the first millennium BC, then people's understandings of them surely would have changed, and new myths and meanings would have been ascribed to them. Closer to this project's area of study, Vyner (1994) has suggested that cross-ridge dykes with pit alignments on the North York Moors could be Late Neolithic to Early Bronze Age, with the pits functioning as stone settings which were later encased in an earthwork bank. This implies multiple phases of construction along the same boundaries, raising questions about exactly how long the life histories of the Wolds earthworks might be (see Chapters 5-6).

Later prehistoric pit alignments are known in Britain (e.g. Rylatt and Bevan 2007 in the Peak District; Wigley 2007 in the Welsh Marches) and on the Continent (e.g. Løvschal 2014 in Western Jutland and Holland). Wigley (2007) argues that the Late Bronze Age/Early Iron Age pit alignments of the Welsh Marches, which are found in the same landscape as cross-ridge dykes, were tied to land tenure, politics and community identity. He notes their coincidence with watercourses and the natural topography, comparing them with linear earthworks, which also may reference water and ridges (ibid.: 123-126). Løvschal (2014) explores the permeability of the boundaries formed by pit alignments, and argues that they and other linear landscape divisions, such as linear barrow cemeteries (Bourgeois 2013), signal changing conceptual understandings of the world.

At Melton at the southern tip of the Yorkshire Wolds, excavations revealed a row of pits or postholes between the linear earthwork ditches, which are thought to date from roughly the same phase as the earthwork, or else shortly thereafter in the Roman period (Fenton-Thomas 2011: 130-140, Fig 205-206). The some of the pits were cut by one of the linear earthwork ditches (ibid.: 133), and two pits had evidence of postpipes (ibid.: 137-138), which supports the idea that they formed a visible boundary. A similar example of an earthwork with pit or post alignments along its banks can be seen in the Multiple Ditch System at Wetwang-Garton Slack (Sections 5.2.2.5, 5.3.1.10-5.3.1.12), where a post row or palisade may have embellished a N-S boundary running perpendicular to the main earthwork-road. Like Wigley's (2007) examples from the Welsh Marches, these later prehistoric pit/posthole alignments at Melton and Wetwang-Garton Slack functioned as boundaries, and they would have been part of a continuum of land division. It is possible that their earlier prehistoric counterparts served a similar purpose. Potentially, by the time that the linear earthworks of the Yorkshire Wolds were constructed in the Late Bronze Age to Early Iron Age, some pit alignments could already be an old, well-established monument type, marking out ancient boundaries that were still in use. In order to understand how particular pit alignments and earthworks related to each other, a biographical approach to place (Section 2.2.2) could help to trace the life histories of places through deep time, and to consider the agency of older monuments. Neither of the case study earthworks explored by this project, Huggate Dykes and Wetwang-Garton Slack, seems to have incorporated earlier prehistoric pit alignments into its banks or ditches—the pit/posthole alignments at Wetwang-Garton Slack appear to be generally contemporary with the earthworks—but this could have happened elsewhere on the Wolds, and both case studies did incorporate or reference other types of earlier prehistoric monuments.

a

b

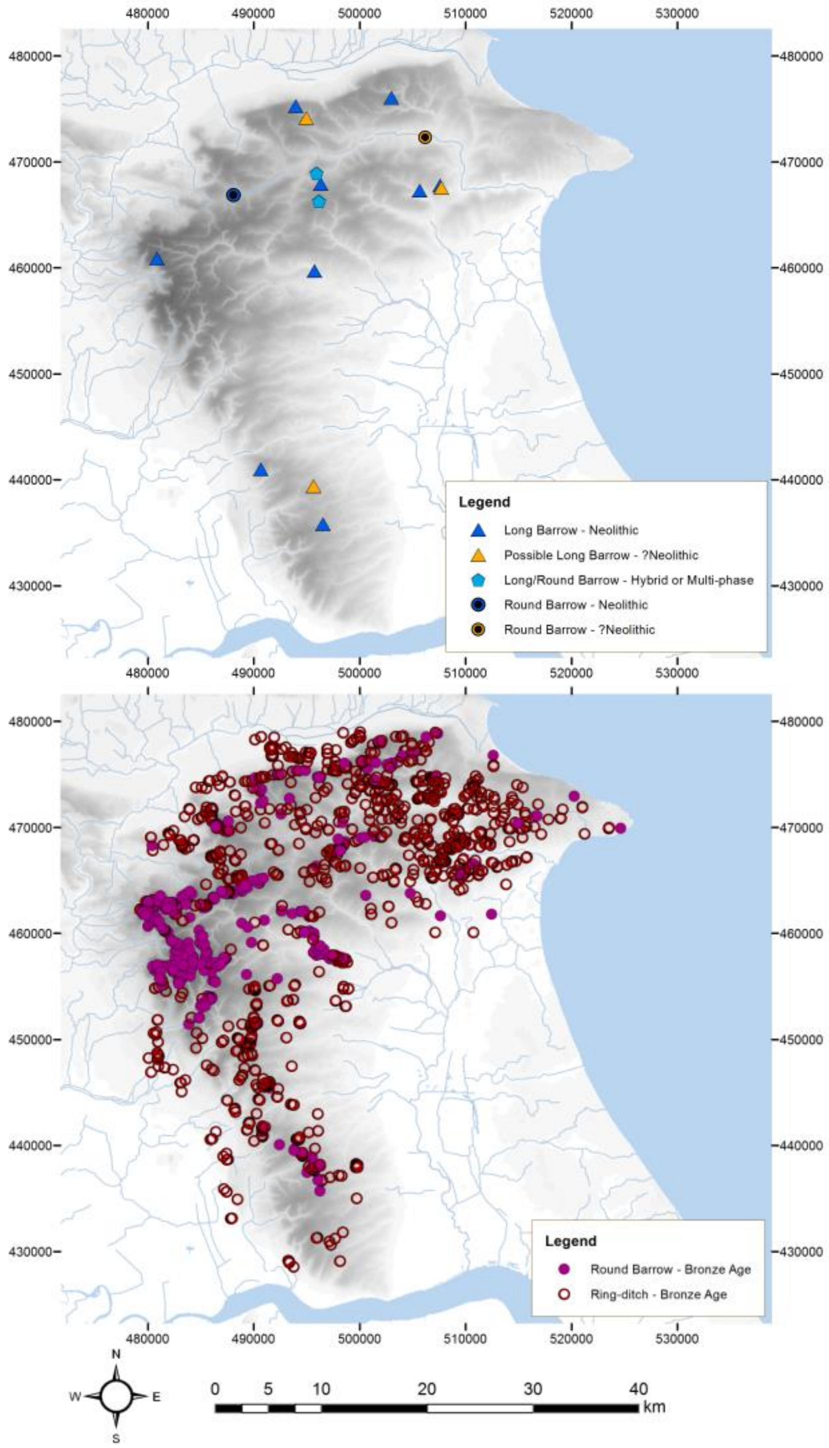


Fig 4.6 Neolithic (a) and Bronze Age (b) funerary monuments
Data after Stoertz (1997). Contains Ordnance Survey data © Crown copyright.

By the time the linear earthworks were constructed, the Yorkshire Wolds were crowded with Neolithic and Bronze Age funerary monuments (Fig 4.6). Over 1600 are recorded by Stoertz (1997) and Mortimer (1905: foldout map at front of volume; see Appendix A, where earlier monuments from Mortimer and Stoertz have been digitised), and undoubtedly many more have been lost. The surviving Neolithic barrows mainly cluster on the northern portion of the Wolds (Fig 4.6a). By the Bronze Age, there was an explosion of monument construction across the region (Fig 4.6b). Stoertz (1997) separates out circular cropmarks without mounds and assigns them to the Middle Bronze Age—cautiously preferring to call them ring-ditches, rather than barrows. However, some of these 'ring-ditches' are clearly ploughed barrows; where a 'ring-ditch' was present on Mortimer's (1905) map, or where it was marked as a 'tumulus' on Stoertz's Ordnance Survey maps, it was reclassified as a barrow in Fig 4.6b. Regardless of the exact morphological classifications and dates of these monuments, the effect on Late Bronze Age and Early Iron Age communities would have been the same: people may have recognised them as special features in the landscape, and they could have created new places and boundaries with the existing monuments in mind.

Fig 4.7 Duggleby Howe Neolithic round barrow
(Photograph: author 2011).

Monuments such as Duggleby Howe Neolithic round barrow (Fig 4.7), with its massive 360m-diameter enclosure ditch, would have peaked people's curiosity and generated stories. Williams (1998) argues that the re-use of

Bronze Age barrows in Anglo-Saxon England was essential for the maintenance of Germanic origin myths. These barrows were reinterpreted in order to negotiate identity and cosmology in way that visibly linked the Anglo-Saxons with the distant past. The biographies of these monuments may appear discontinuous from an archaeological perspective, with thousands of years between episodes of funerary activity, but the myths which drove the Anglo-Saxons to bury their dead there would have bridged that temporal gap, creating what Gosden and Lock (1998) call 'mythical history' (as opposed to 'genealogical history'). Rogers (2013) demonstrates that Early Bronze Age barrows in the Peak District create visual links with earlier monuments, and she argues that this was possible because the earlier monuments were part of Early Bronze Age communities' social memory. She proposes that mythical histories would have been created around the bank barrow at Long Low and the henge at Arbor Low, and that the builders of the Early Bronze Age barrows around these two monuments would have drawn upon these myths. In the medieval period, many barrows became associated with mythological creatures and the un-dead. The *trows*, *draugr* and *hogboon* of Orcadian folklore, for example, reflect Scandinavian and pre-Scandinavian attitudes towards death and un-death (Scholma-Mason 2014). It is not only possible, but highly likely that the builders of the Wolds earthworks would have created fantastical legends to explain the presence of the barrows surrounding them. Whereas Middle to Late Bronze Age funerary monuments might have sparked histories of a more genealogical nature (see Gosden and Lock 1998 and Section 2.4), Neolithic and Early Bronze Age barrows would have been remote enough to require mythological histories. The latter could have been bolstered by chance discoveries made when linear earthworks were cut through barrows. An earthwork cuts through the centre of Mortimer's Barrow 127 in the Wharram Percy Group (Group 2; Mortimer 1905: 50-52), and the earthwork banks and ditches which encircle Barrow 256 of the Aldro Group (Group 3; Mortimer 1905: 61) truncated the northern side of the barrow, disturbing an Early Bronze Age cremation and incorporating it into the earthwork.

In situations such as these, the earthwork builders of the Wolds would have encountered the bones of people with strange material culture—pots which they did not recognise and metalwork which seemed alien. If they had dug through Mortimer's Barrow 81 in Garton Slack (Figs 4.8 and 4.9; Mortimer 1905: 238-241), for example, they would have seen a strange sight indeed. One of the inhumations in the barrow (Burial 1, Fig 4.9) was missing the bones of its left foot from the instep down, and two flints had been laid in the grave in their place. The head of the individual had been twisted upwards and a third flint was positioned next to the teeth. Although the builders of the earthworks did not excavate Barrow 81, other barrows (e.g. Barrows 127 and 256) were fully or partially destroyed by their new boundaries, and it is possible that the earthwork builders would have taken note of the burials inside of them. If these barrows contained equally unfamiliar materials, it would not be unreasonable to surmise that they would have generated myths about strange creatures that lived in the mounds. Additionally, only one or two Early Bronze Age burials might need to be encountered before news of the strange discoveries would spread to other communities, and myths could then be applied to other, undisturbed barrows. Section 4.2.3 (below) explores how Bronze Age funerary monuments may have influenced the construction of linear earthworks, and the relationships between the barrows and earthworks at Wetwang-Garton Slack and Huggate Dykes are considered in greater detail in Chapters 5 and 6, respectively.

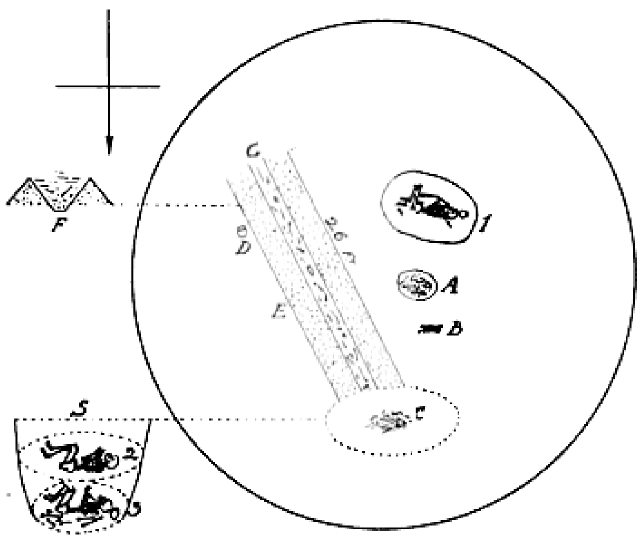


Fig 4.8 Plan of Mortimer Barrow 81
1 – Burial 1, an adult inhumation with foot bones removed and flints added in their place. *A* – Disarticulated bones from multiple individuals (adult and juvenile). *B* – ?Adult foot bones, not from individual in Burial 1. *C* – Grave C, two ?adult inhumations (Burials 2 and 3) and disarticulated bones (adult and juvenile). *D* – Pit containing pottery. *E* – The 'Crematorium', a trough-shaped area of burning between triangular chalk banks; contained cremated bone, burnt gravel and oak pyre debris. *F* – Section of the 'Crematorium'. *S* – Section of Grave C, showing Burials 2 and 3. (Source: Mortimer 1905: Fig 601)

Fig 4.9 Burial 1 from Mortimer Barrow 81, as displayed in Driffield Museum
(Source: Mortimer 1905: Fig 602)

4.1.2 Between the lines: contemporary features in the landscape

The linear earthworks of the Yorkshire Wolds appear to have been constructed from the Late Bronze Age to the Iron Age (see Appendix B for a catalogue of dating evidence), and many remained in use as boundaries and axes of movement into the Roman, medieval and post-medieval periods. It is likely that the network of earthworks which has been mapped by Mortimer (1905), Stoertz (1997) and others represents multiple phases of landscape organisation, rather than a single episode of land division (see Chapters 5-6), and thus the ways in which particular communities were using the land between the earthworks could have changed dramatically throughout their life histories.

The Late Bronze Age-Early Iron Age transition was a time of simultaneous landscape enclosure and open rural settlement on the Wolds (discussed in Section 1.4.1; see Bevan 1997; Giles 2000, 2007, 2012; Fenton-Thomas 2005, 2008; Halkon 2013). In addition to linear earthworks and pit alignments (discussed above, Section 4.1.2), people constructed hillforts and smaller enclosures (Fig 4.10), which may have been used by part or all of the community (compare Bevan 1997 with Giles 2007; Section 1.4.1). The Wolds lack the developed hillforts which are found elsewhere in the Iron Age landscapes of Britain, such as those in Wessex (e.g. Danebury, Maiden Castle). It could be said that the multi-phased construction and modification of linear earthworks, as at Huggate Dykes (Chapter 6), is analogous to the process of building a developed hillfort, in that it cements bonds amongst communities, formalises boundaries and displays the power of particular people to organise such an undertaking. Whereas the communities of Iron Age Wessex devoted a great deal of energy into enclosing and monumentalising individual hilltops, the people of the Yorkshire Wolds monumentalised the land *between* their enclosures instead. Dent (2010: 34) notes that the three largest hillforts or enclosures on the Wolds are located within 3km of the linear earthwork that runs between Huggate and Sledmere (Line A; see Section 4.2, below), suggesting a relationship amongst the enclosures and the earthwork. The unenclosed settlement at Wetwang-Garton Slack has Late Bronze Age and Early Iron Age phases, and is located only 2km to the north of a circular enclosure which might potentially date to around the same time (see Section 5.4).

The enclosures of the Late Bronze Age and Early Iron Age emerged in a landscape which was already full of monuments, myths and meanings (Section 4.1.1, above). In some instances, people may have made the deliberate choice to renegotiate the meanings of particular ancient places. The Middle to Late Bronze Age enclosure at Thwing, for example, reuses a Neolithic Class 2 henge (Manby 1983, 1988; Aspinall and Pocock 1988; Fig 4.11). Although henges, barrows and cursus monuments would have been ancient by the time that linear earthworks and enclosed sites were constructed, they may have exercised agency within the landscape, and thus it should not be surprising that earlier monuments, enclosures and linear earthworks cluster together across the Wolds (Fig 4.12).

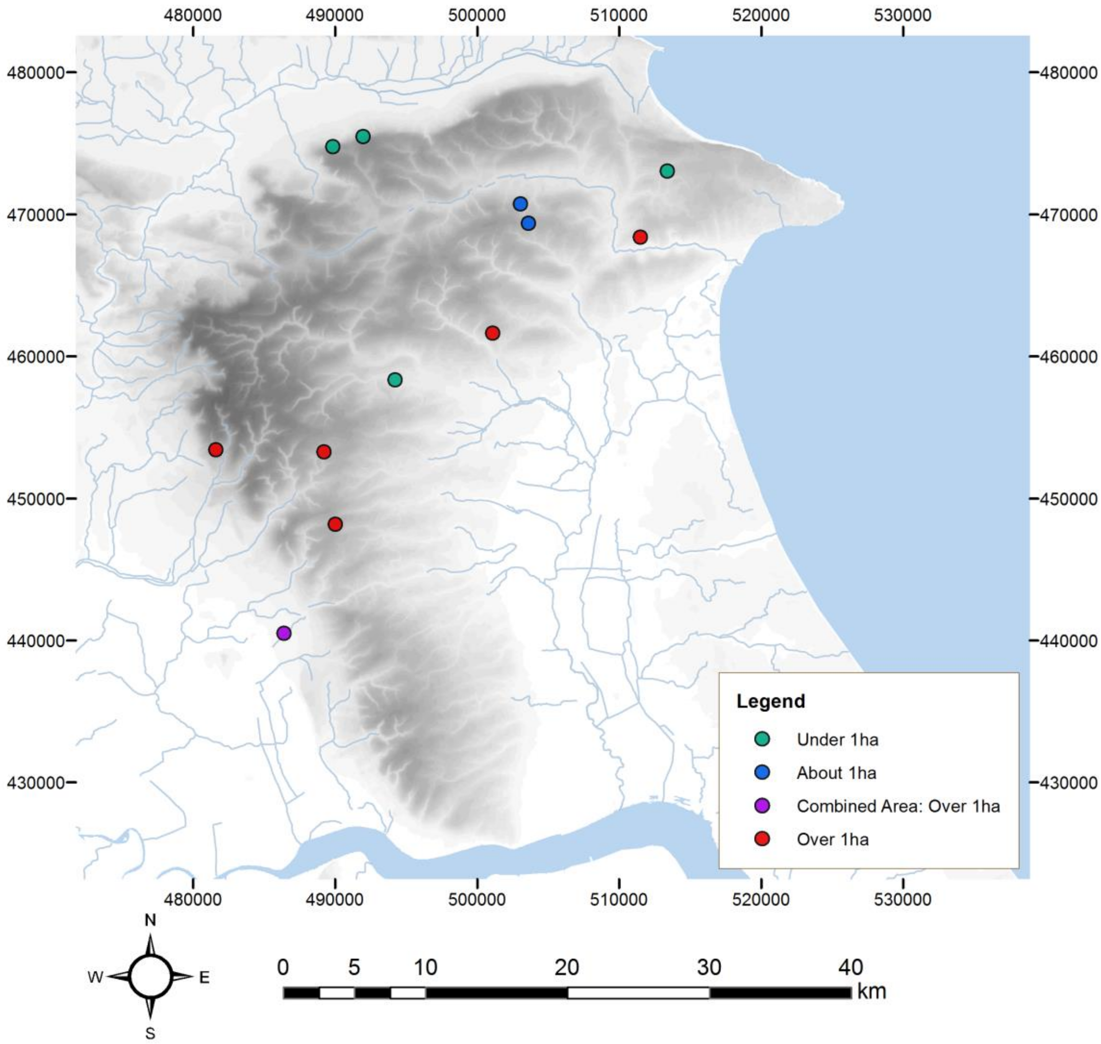


Fig 4.10 Enclosed sites on the Yorkshire Wolds
Data after Stoertz (1997). Contains Ordnance Survey data © Crown copyright.

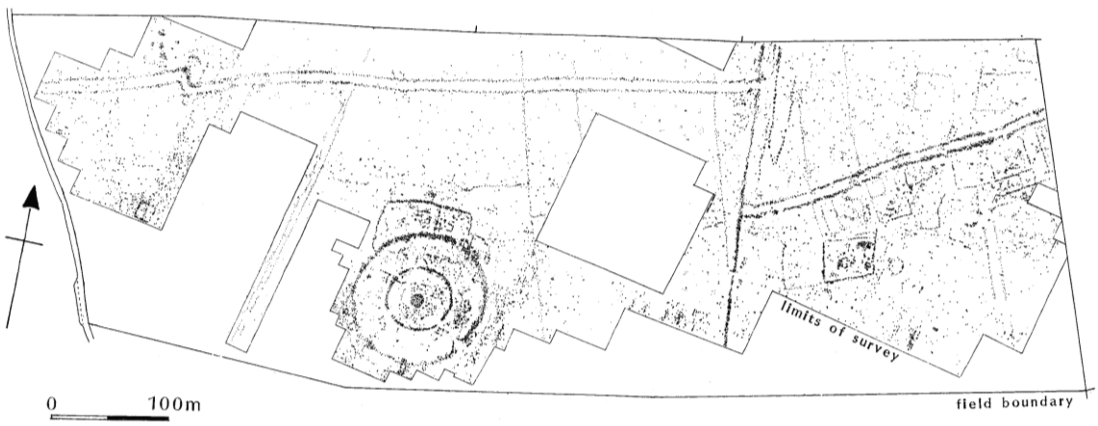


Fig 4.11 Geophysical survey of Paddock Hill, Thwing
Note earlier henge adapted to form inner ditch. (Source: Aspinall and Pocock 1988: Fig 2.2)

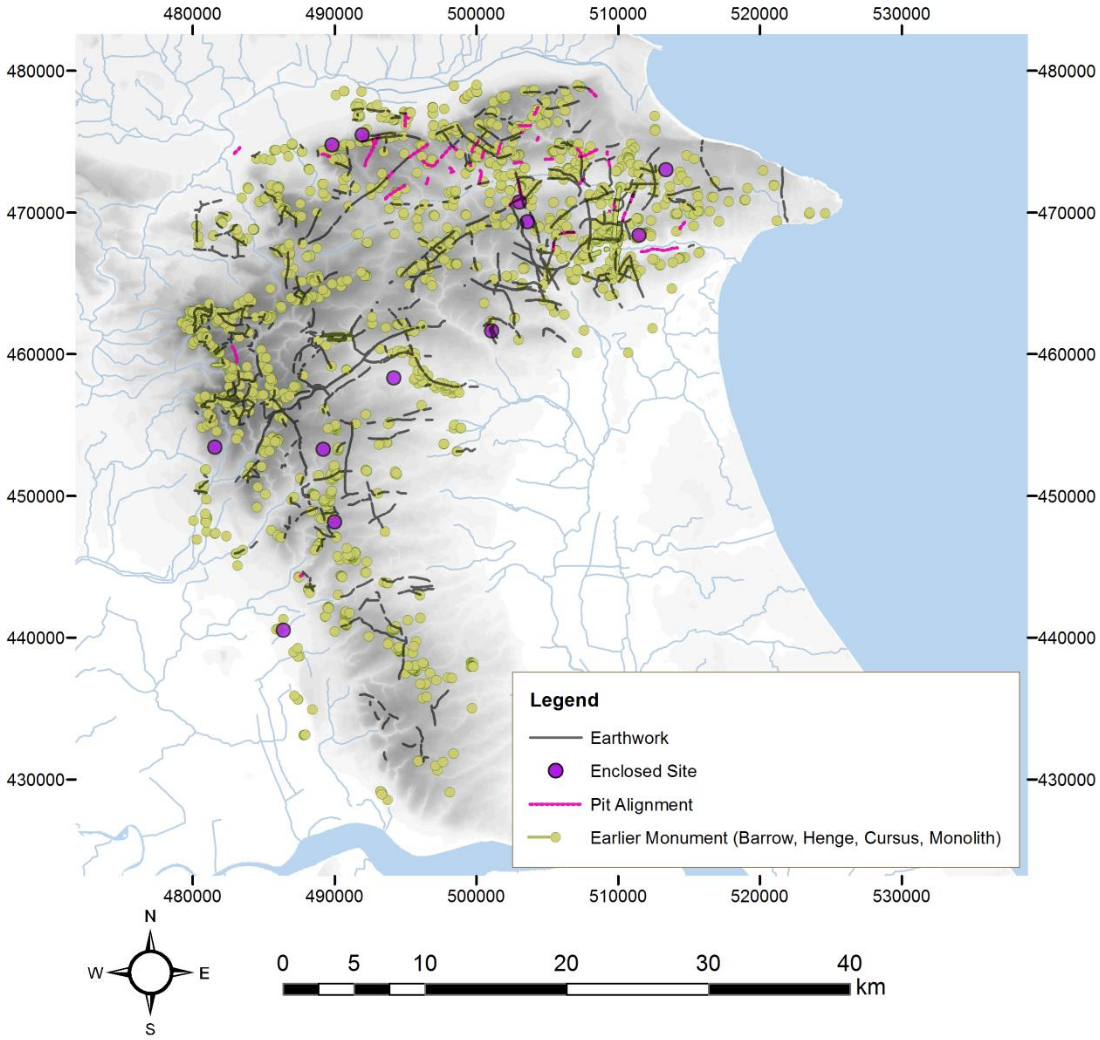


Fig 4.12 Relationships amongst earlier monuments, enclosed sites, pit alignments and linear earthworks
Data after Stoertz (1997). Contains Ordnance Survey data © Crown copyright.

In addition to settlements, which appear to have close relationships with linear earthworks, industrial and agricultural areas would have been found across the later prehistoric landscapes which the earthworks organised. Halkon (Halkon and Starley 2011; Halkon 2013) has mapped bronze and iron production sites on and near the Yorkshire Wolds. At Wetwang-Garton Slack there is evidence for bronze production, and the nearest iron smelting evidence comes from Elmswell to the east (ibid.). Agricultural activities are more difficult to trace than metalworking, and although linear earthworks may relate to overarching patterns of land use, it is difficult to ascertain exactly which areas of the landscape were used for arable farming and which were used for pasture at any given point in later prehistory. Rectilinear field systems of uncertain date were mapped by Stoertz (1997) to the south of Wetwang-Garton Slack, and it is possible that they could relate to the Middle or Late Iron Age activity within the valley bottom, and/or the Late Iron Age ladder enclosures which cross the hillside between the settlement-cemetery complex and the circular enclosure to the south (see Section 5.4). However, the Yorkshire Wolds lack the coaxial or Celtic field systems found elsewhere in Britain (e.g. on Dartmoor and in the Yorkshire Dales; Fleming 1987; Laurie 2003), and it seems likely that many farming activities were not enclosed until the Late Iron Age.

By the Late Iron Age, ladder settlements enclosed people's homes, subdividing the land into small plots alongside and between linear earthworks which, by then, would have been ancient. Fenton-Thomas (2005: 60-63) believes that this shift in settlement type mirrors the abandonment of Middle Iron Age square barrow cemeteries, and that both trends signal changing relationships amongst people, sheep and the land on the high Wolds. Linear earthworks continued to be useful for dividing the land, but the spaces between them would have been increasingly occupied by individuals, rather than entire communities (ibid.). A landscape which was virtually full of monuments (Fig 4.12) was parcelled up, and people would have renegotiated acceptable routeways and areas of common land, drawing upon the material remains of monuments and the myths associated with them in order to give their new world legitimacy and meaning.

4.2 Mapping linear landscapes

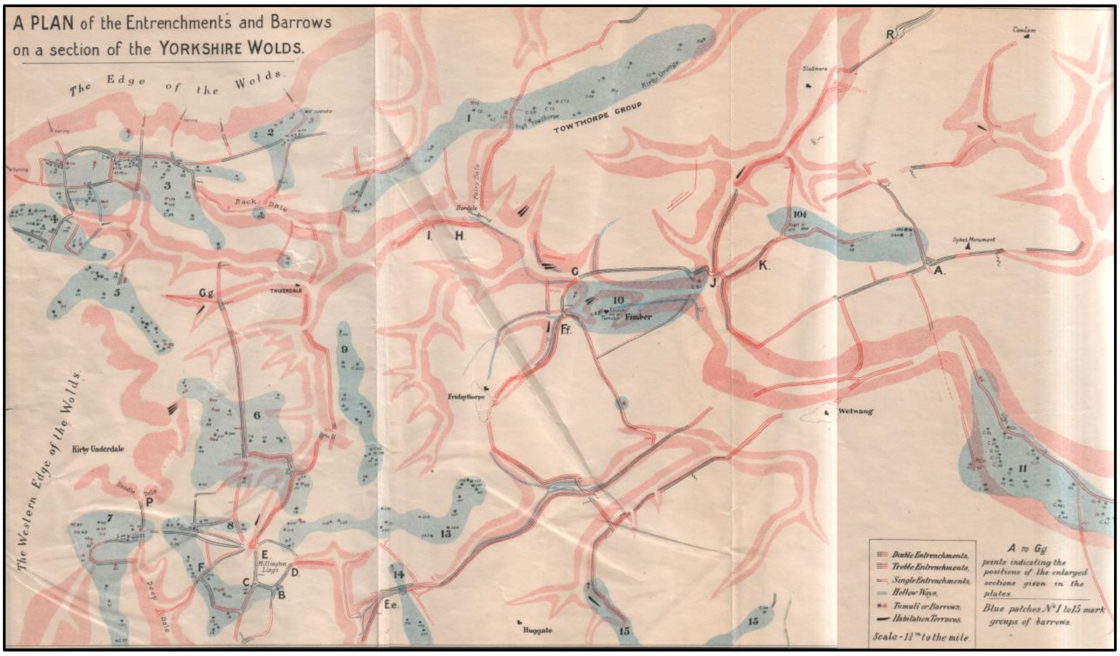
By weaving together multiple strands of evidence, it is possible to map the creation of linear landscapes during the first millennium BC. This section presents the GIS data sets used by the project and explains how they were digitised, synthesised and analysed. The project drew upon data sources at several scales in order to answer different types of questions, from site-specific biographies of place to broad social patterns (see Table 3.1). The remainder of this chapter will address linear earthworks at the macro and meso scales, and Chapters 5 and 6 will delve into the micro.

The project began with the most frequently available type of data source for linear earthworks: printed maps. These maps provided information about the earthworks' morphologies and locations—information which was made clearer after the data had been collated in a GIS. Finally, satellite imagery and field observation were used to check the accuracy of the classifications assigned based on the map sources; these techniques provided additional information and were used to refine classifications and interpretations where necessary.

4.2.1 Data sets

The first sources of information to be incorporated into the project's GIS were the maps of Mortimer (1905) and Stoertz (1997). In his 1905 volume, John Robert Mortimer published a lifetime's worth of archaeological research, conducted with his brother Robert Mortimer (see Giles 2006; Mortimer 1905, 1978). Together, the Mortimer brothers surveyed and excavated barrows and linear earthworks across the Yorkshire Wolds, including earthworks that had been virtually destroyed and reduced to cropmarks, or 'the line[s] of rubbly stone from the ploughed-down ramparts, and the green bands in the growing corn' (Mortimer 1905: 369). Meticulous in his methods and site descriptions, JR Mortimer's (1905) text and map of the earthworks that he and his brother surveyed (Fig 4.13; Mortimer 1905: foldout map at front of volume) offered a useful starting point. This 1905 map is believed to have been based—at least in part—on an earlier version completed by Robert Mortimer in 1886 (prior to his death in 1892), and therefore represents the collective research and interpretations of both brothers (Giles 2006: 284).

a



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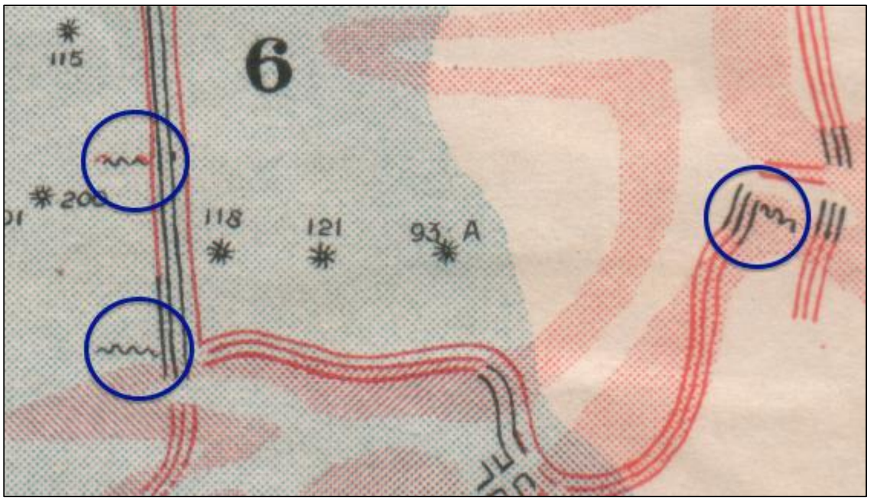


Fig 4.13 Mortimer's map of the Central Wolds (a), with inset showing earthwork profiles (b)

John Robert Mortimer and his brother Robert mapped the barrows, linear earthworks, trackways and terraces around Fimber (a). Earthworks and barrows that had already been mapped by the Ordnance Survey are marked in black, and newly discovered earthworks and barrows are shown in red (Mortimer 1905: 378). Double lines represent single earthworks, triple lines double earthworks and so forth, with the gaps between the lines showing the banks. Some earthworks have profiles next to them (b, highlighted by blue circles), indicating the morphology of the banks and ditches at the time that they were surveyed. These demonstrate that some earthworks have ditches flanking both sides of their banks (e.g. the lower left profile of a triple earthwork, which appears to show a sequence of *ground surface-ditch-bank-ditch-bank-ditch-bank-ditch*, moving from west to east) and therefore the lines on the map equate to ditches. Other earthworks, however, have paired banks and ditches (e.g. the profile of a double earthwork on the right, with the sequence *ground surface-ditch-bank-ditch-bank*), and thus the lines on the map do not directly equate to the ditches as the gaps between them do to the banks. (Source: Mortimer 1905: foldout map at front of volume)

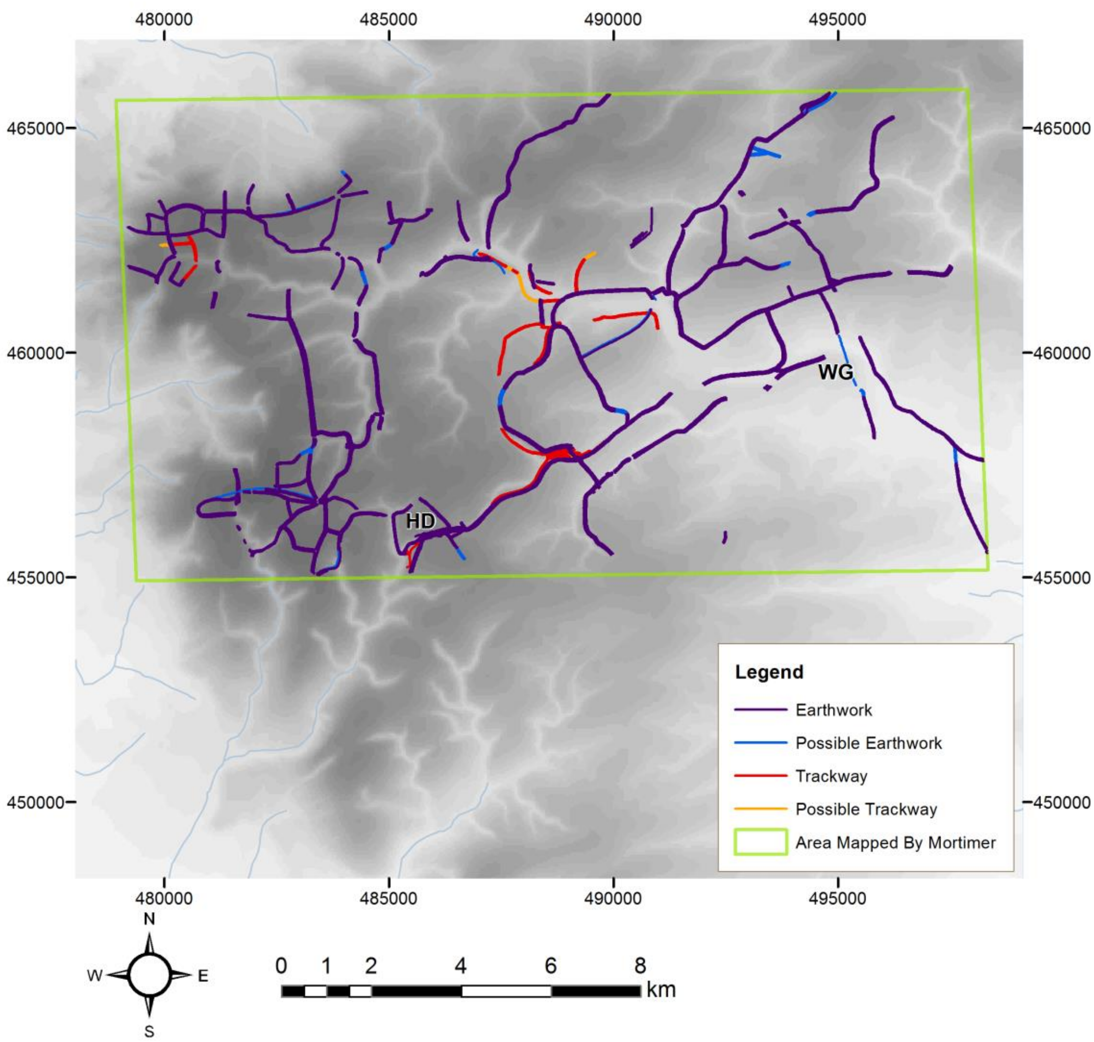


Fig 4.14 Mortimer's earthworks plotted in a GIS
Huggate Dykes (HD) and Wetwang-Garton Slack (WG) are marked. After Mortimer (1905: foldout map at front of volume). Contains Ordnance Survey data © Crown copyright.

Mortimer's map (Fig 4.13) was georeferenced, and the earthworks and trackways were then digitised (Fig 4.14). These were broken down into confirmed and possible features based on the map's solid and dashed symbols. Confirmed earthworks dominated the data set, with possible earthworks filling the gaps between them. Confirmed and possible trackways were closely associated with confirmed earthworks, suggesting that movement occurred alongside or near the latter. The overall layout of earthworks and trackways is one of large enclosures that follow the natural topography, sectioning off irregularly-shaped parcels of land. The enclosed areas are typically smaller in the western half of the mapped area, where the elevation is higher and more punctuated by steep valleys. The eastern enclosures are more open, and some form long corridors.

Stoertz's (1997) data were gathered during the large-scale Yorkshire Wolds Survey carried out by the Royal Commission on the Historical Monuments of England (RCHME; subsequently English Heritage and currently Historic England). Using aerial photographic transcription to map the prehistoric archaeology of the region, the project was one of the initial studies which later came to form the National Mapping Programme. Stoertz (1997: 17) assigns linear earthworks to the morphological classification of 'long linear', which she defines as being non-enclosure related and at least 100m in length. Cursus monuments also belong to this category, whereas long barrows and other similar cropmarks less than 100m in length are classified as 'short linear' features (ibid.). Linear earthworks are discussed in the monograph alongside trackways and enclosures (ibid.: 40-59).

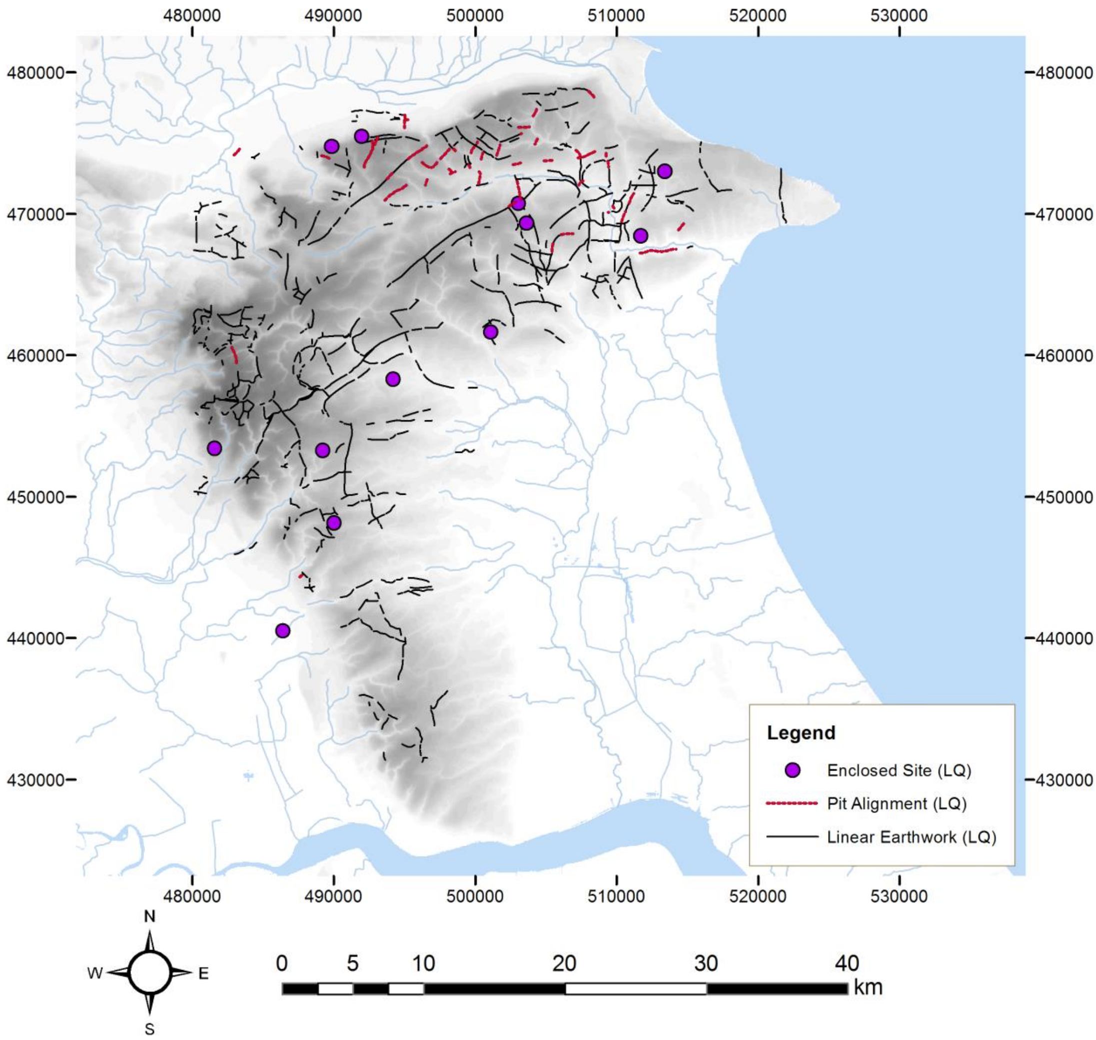


Fig 4.15 Stoertz's interpretive data plotted at low resolution
After Stoertz (1997: Fig. 20 and 33). Contains Ordnance Survey data © Crown copyright.

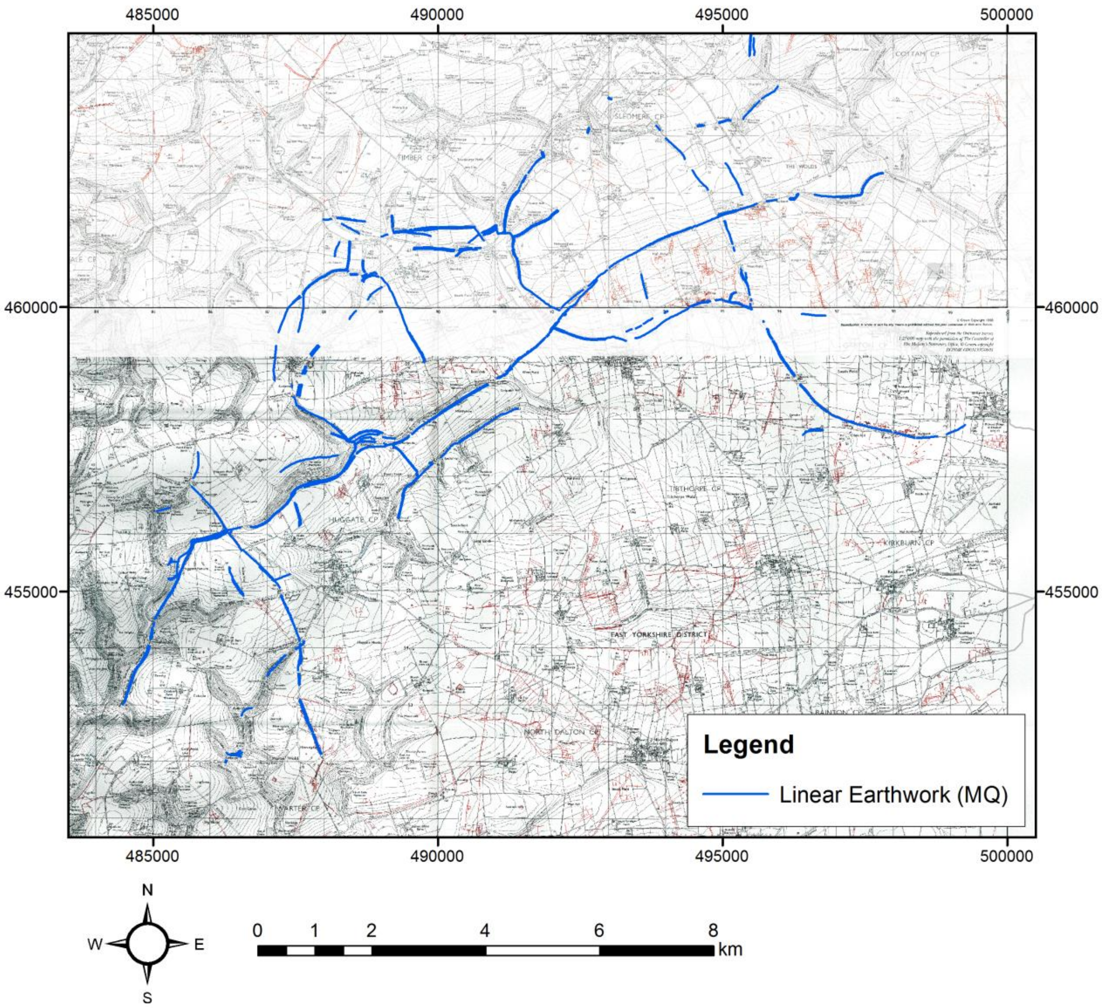


Fig 4.16 Digitising linear earthworks from Stoertz's maps (medium resolution)
Contains data and basemap images from Stoertz (1997). Contains Ordnance Survey data © Crown copyright.

Stoertz's data exhibit a similar pattern to Mortimer's map, with earthworks forming small, densely packed enclosures on the western edge of the Wolds (Fig 4.15). Long, linear corridors characterise the north-central Wolds (Figs 4.15-4.16), and beyond the border of Mortimer's map, the earthworks and pit alignments of the north-eastern Wolds form a patchwork of enclosed areas (Fig 4.15). These earthworks of the north-central Wolds are discussed in detail in Sections 4.2.2 and 4.2.3, as they are the primary focus of this study. The southern Wolds are more sparsely covered (Fig 4.15); the earthworks there fell outside of the MQ case study area, so this project did not analyse them in detail. However, this picture of a largely open swathe of territory could be incorrect. Halkon's (2008) doctoral research examined the landscape of the Foulness Valley and demonstrated that land divisions extended beyond the edge of the Wolds. Perhaps one of the most notable earthworks mapped by Stoertz on the southern Wolds is the one that runs through Goodmanham Dale (also called the Goodmanham Gap). This earthwork could have signposted the natural break in the chalk hills, directing—and perhaps controlling—movement between the lowlands to the east and west. A new doctoral project investigating the earthworks of the southern Wolds, including the area around Goodmanham, is in preparation at the University of Hull (Halkon pers. comm.); such a project would bridge the geographical gap between Halkon's (2008) research and this PhD.

Comparing the zoomed-out, interpretive figures from Stoertz's monograph (especially Fig. 33) with the accompanying 1:25,000 OS maps (Stoertz 1997: Maps 1-4) was essential for the digitisation and re-analysis of the earthworks. Both were georeferenced and digitised (Figs 4.15 and 4.16). The monograph's figures were useful for discerning region-wide patterns, such as areas that are particularly dense in earthworks (e.g. the western-central Wolds and the northern Wolds to the south of the Gypsey Race). They did not provide sufficient information to understand the roles or morphologies of particular earthworks. The detailed 1:25,000 maps were required, for example, to discern the numbers of banks and ditches comprising any given stretch of earthwork, or to suggest whether or not gaps in an earthwork might have been intended as crossing points from one 'territory' or landscape zone to another. It was beyond the scope of this project to conduct a detailed analysis of this vast data set in its entirety, so all of Stoertz's earthworks were digitised at low resolution from the interpretive figures in the monograph (Fig 4.15, after Stoertz 1997: Fig. 20 and 33). Digitisation at a higher resolution focussed on the central Wolds, from the highest elevation around Huggate in the west, to the low ground immediately to the east of Wetwang-Garton, and finally up to the Gypsey Race (Fig 4.16). The linear earthworks, pit alignments and defended sites within this area were digitised from the transcriptions on Stoertz's OS maps (1997: Maps 1-3).

Within this high-resolution area, a long alignment running from Huggate to Garton/Sledmere (ibid: Maps 1 and 3 only) was chosen for in-depth landscape analysis (Fig 4.17). This earthwork forms the Sledmere Green Lane (see especially Fenton-Thomas 2005, 2008), the biography of which Chadwick (in press: 7; drawing on Fenton-Thomas 2008) sums up as follows: the earthwork was created in the Late Bronze Age and had become a formalised trackway by the Late Iron Age; this trackway function continued into the Roman Iron Age and then intermittently throughout the medieval period, when the Green Lane was used mainly as a boundary; finally, the post-medieval incarnation of the earthwork was as a coach road. Along with its adjacent earthworks, including the one at the core of the Wetwang-Garton Slack settlement and cemetery complex, this project followed the Sledmere Green Lane alignment (hereafter referred to as Line A; see Section 4.2.2.2) through space and time in order to develop a micro-level landscape biography. It has used the narrative of the alignment's life history as outlined by Chadwick (in press) and Fenton-Thomas (2008) as a starting point, questioning whether it would be possible to tell the same general story at multiple points along the alignment. In other words, the project asked whether individual places along Line A would have had the same sequence of construction, meanings and functions—i.e. if the alignment developed as a whole, and remained a single entity—or whether particular segments of it had dramatically different stories to tell. Two areas of the alignment were selected as case studies (Fig 4.17). Huggate Dykes, at the western end (Fig 4.17, green; see Chapter 6), is more monumental than would be necessary for purely agricultural use, and the complexity of its banks and ditches offered a contrast to the second case study, the road-like earthwork at the heart of the Wetwang-Garton Slack settlement-cemetery complex (Fig 4.17, blue; see Chapter 5). In addition to comparing the two case study sites against each other, the project has carefully considered them through the lens of movement, a theme which is central to the Line A biography constructed by Fenton-Thomas (2008) and Chadwick (in press); this is explored in Chapters 5-7 (especially Section 6.4).

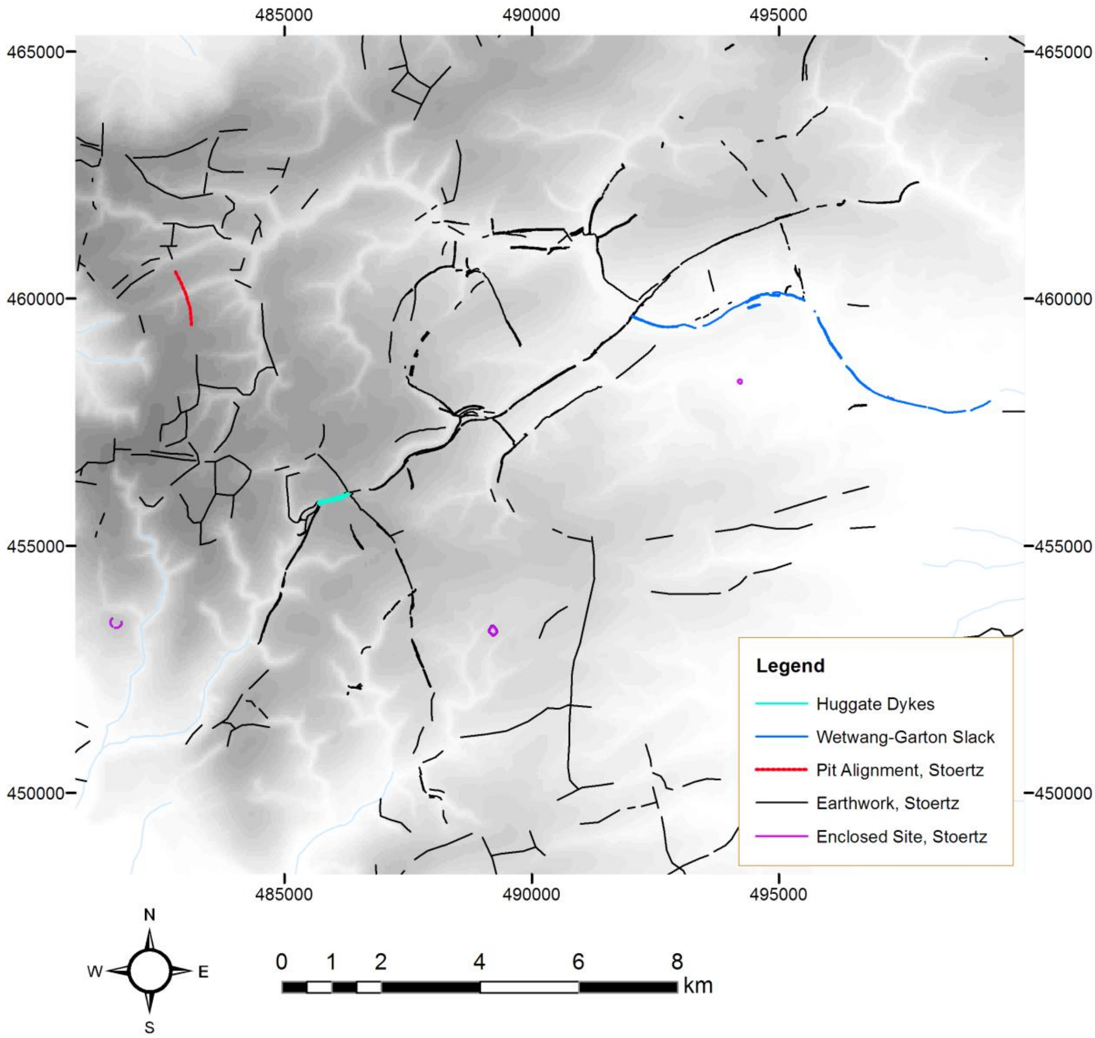


Fig 4.17 Main case study area (medium-resolution data around Huggate and Wetwang-Garton Slack) After Stoertz (1997: Fig. 20 and 33). Contains Ordnance Survey data © Crown copyright.

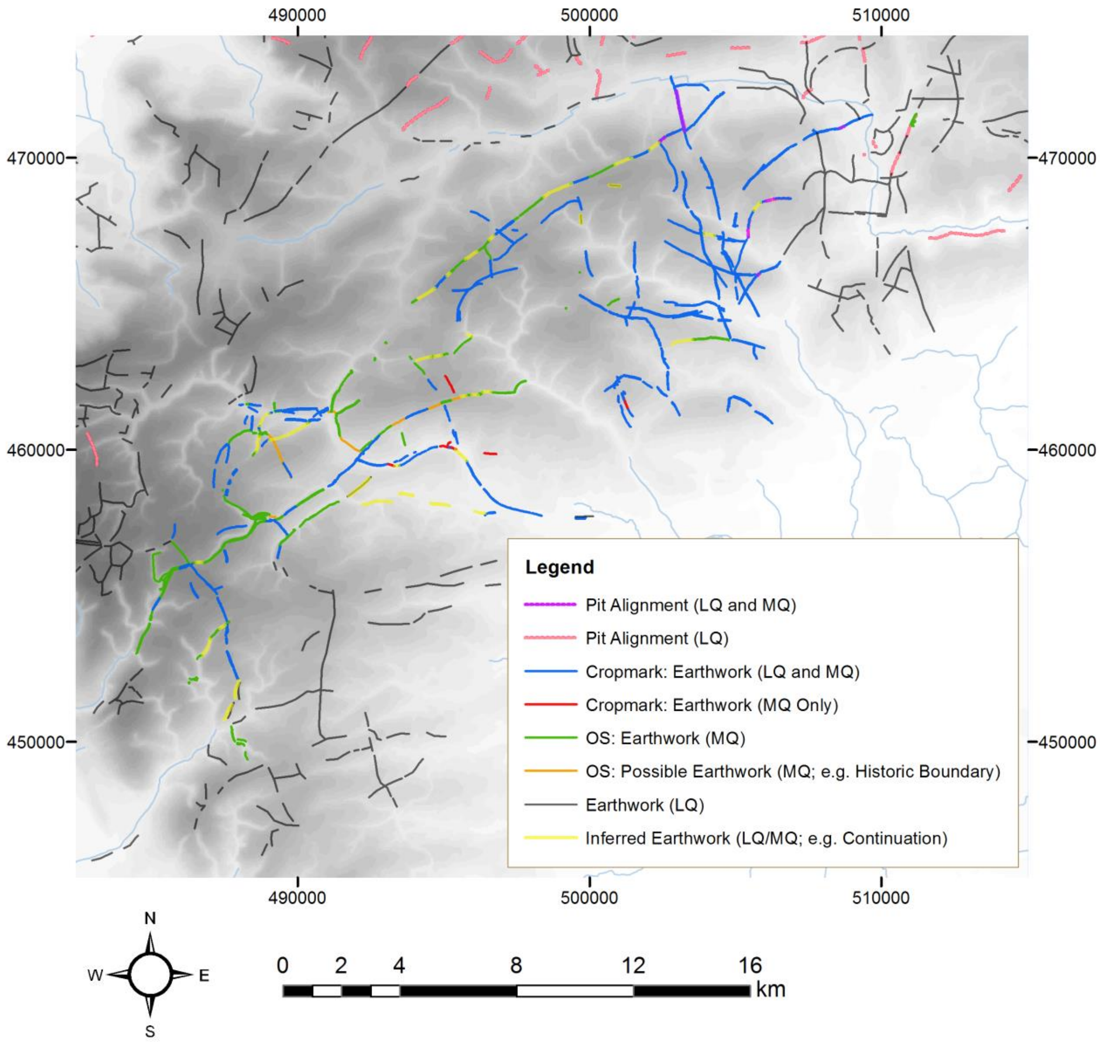
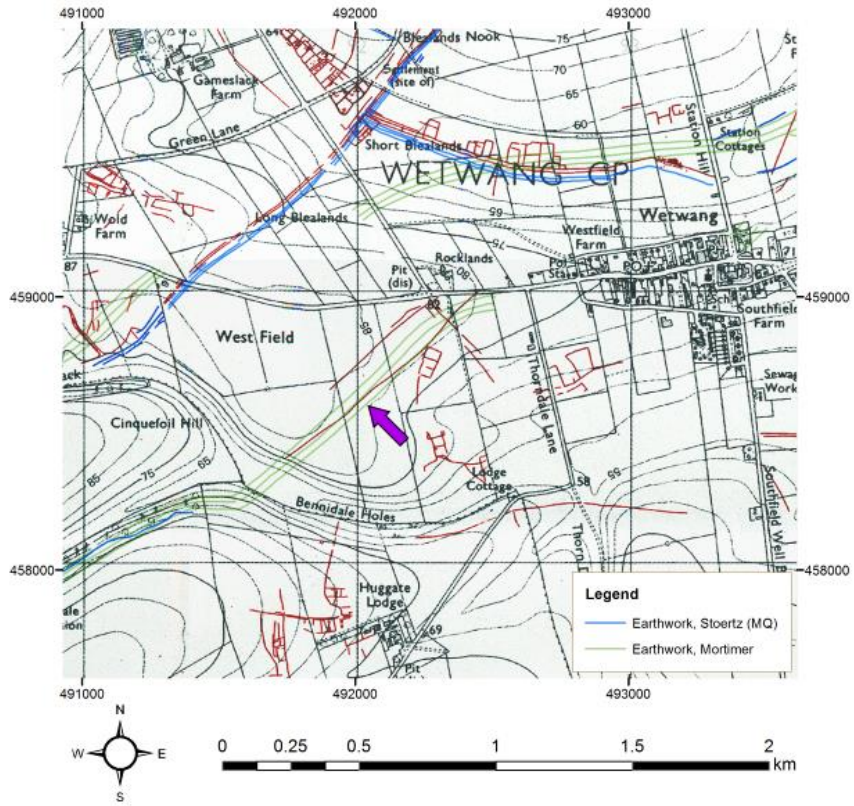


Fig 4.18 Stoertz's earthworks by source (OS, cropmark)
Earthworks in shown in red and orange appear on Stoertz's MQ Ordnance Survey maps but are not present on the interpretive (LQ) Figs in the monograph (Fig. 20 and 33). After Stoertz (1997). Contains Ordnance Survey data © Crown copyright.

The digitisation process revealed a handful of inconsistencies between the Stoertz's interpretive figures (1997: Fig. 20 and 33) and 1:25,000 maps (1997: Maps 1-3), although the two data sets are largely consistent. Several stretches of linear earthwork were present on the detailed maps but not on the interpretive figures (Fig 4.18, shown in red and orange). For example, segments of the Wetwang-Garton earthwork (Fig 4.18, shown in red) are missing from the interpretive figures of linear earthworks (Stoertz 1997: Fig. 20 and 33) but are clearly present on the 1:25,000 maps (Stoertz 1997: Maps 1 and 3). At Wetwang-Garton Slack, this inconsistency is due to the fact that the central segment was classified as a ladder settlement in Stoertz's monograph, which reflects a later stage of its biography (see Chapter 5 for an account of how the earthwork became embellished with ladder settlement enclosures in the Late Iron Age). One classification does not preclude the other, however, and therefore the segment has been re-assigned as part of the same linear earthwork. Some historic or modern boundaries were identified by as possible linear earthworks (Fig 4.18, shown in orange). These are absent from Stoertz's interpretive figures but their locations within known earthwork alignments suggest that they are continuous boundaries, and the author had sufficient confidence in them to include them in her analyses. Linear earthworks are known to have evolved into parish and farm/field boundaries in places such as Huggate Dykes (see Chapter 6 and Section 7.1.2), so it is not unlikely that these orange segments were initially constructed as earthworks. At the linear earthwork complex at Stanwick in North Yorkshire, some earthworks developed into parish boundaries and roads (Welfare et al. 1990 [Stanwick report Part 2]; see also Haselgrove et al. 1990 [Part 1] and Haselgrove et al. 1990 [Part 3]), and elsewhere in Britain, prehistoric field systems are known to have been fossilised and incorporated into later land divisions (e.g. on Dartmoor: Fleming 1987, 2008; in East Anglia: Williamson 1987). Williamson (2012: 97-98) notes the tendency for long tracks to be present in co-axial field systems which have been re-used and re-modelled in later periods; the theme of long-lasting movement along and around the Wolds linear earthworks is explored in Chapter 6 (especially Section 6.4).

Other potential earthworks identified during the digitisation process were inferred from one or both of Stoertz's data sets (Fig 4.18, shown in yellow), and they required additional follow-up with map regression, satellite imagery or excavations reports (at Wetwang-Garton Slack). The inferred earthworks inspired less confidence but were convincing enough to be taken into account during the spatial analyses in Section 4.2.3. The cropmarks around Wetwang Village, for example, were not all equally clear on Stoertz's MQ maps (Fig 4.19). A segment to the south-west of the village appears on the interpretive (LQ) figures, but the corresponding cropmark on the MQ map is a single line that could easily be another type of linear feature, such as a field boundary (Fig 4.19a, indicated by purple arrow). Indeed, a shorter boundary about 120m to the north-west of the cropmark in question is more convincing as an earthwork or trackway, but it is not long enough to be the LQ line. Mortimer does map an earthwork somewhere near these cropmarks (Fig 4.19a-b), so the longer one was digitised as an inferred earthwork (Fig 4.19b).

a



b

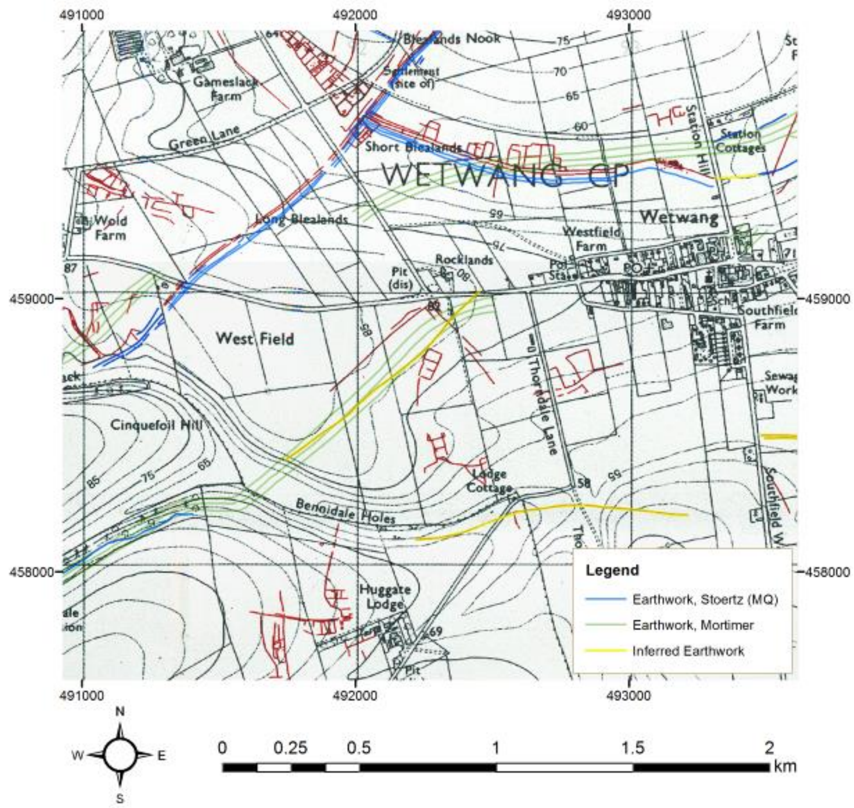


Fig 4.19 Inferred earthworks around Wetwang Village

The linear cropmark indicated by the purple arrow (a) appears on Stoertz's LQ Figs, but whether it is an earthwork or a field boundary is not apparent from the corresponding MQ map. Mortimer's map suggests that it was once an earthwork, but further investigation was required. Thus, this segment and others around Wetwang Village were digitised as 'inferred' earthworks (b). After Stoertz (1997) and Mortimer (1905). Basemap from Stoertz (1997). Contains Ordnance Survey data © Crown copyright.

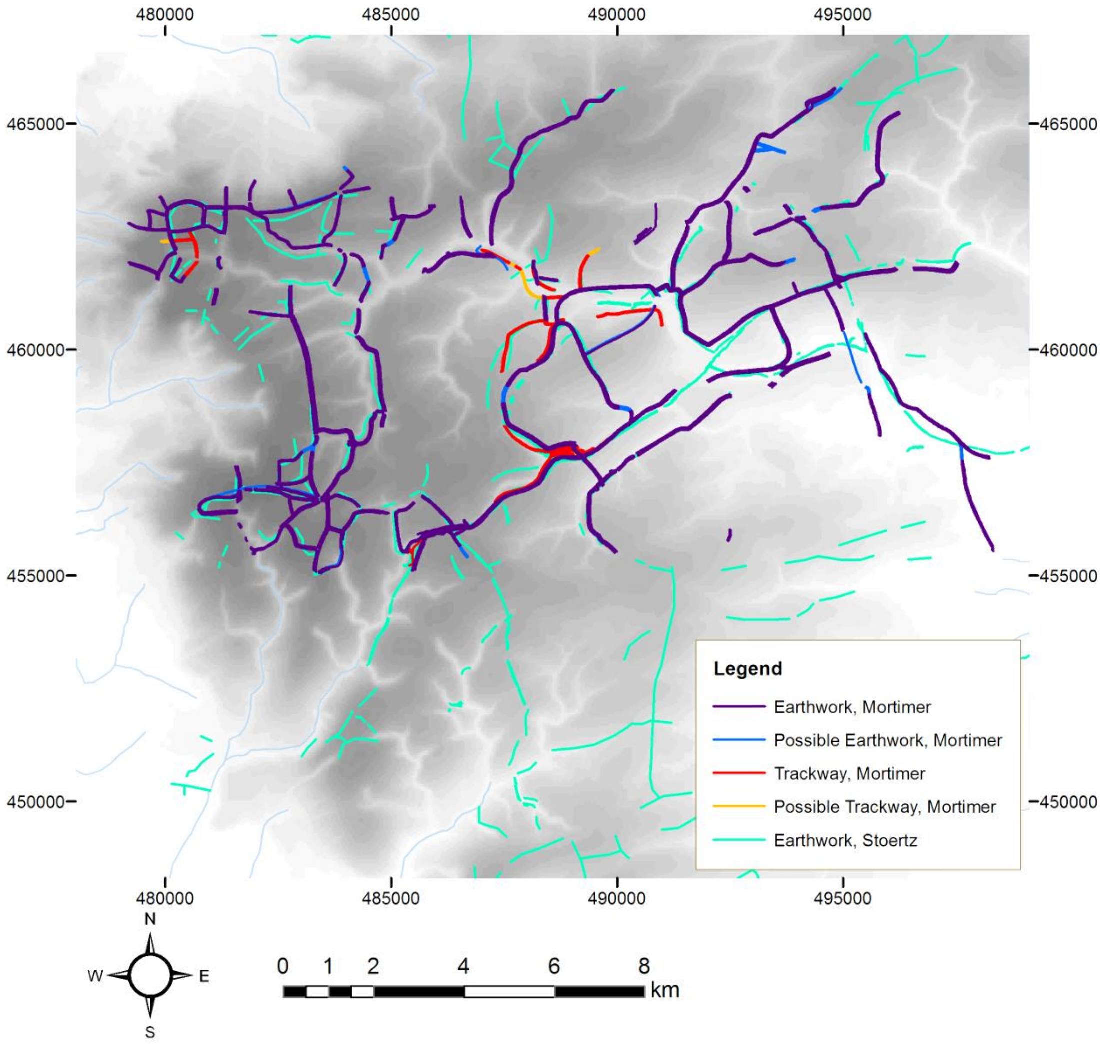


Fig 4.20 Side-by-side comparison of antiquarian and aerial photographic data digitised to date, centring on the earthworks around Wetwang-Garton Slack and Huggate Dykes
After Mortimer (1905) and Stoertz (1997). Contains Ordnance Survey data © Crown copyright.

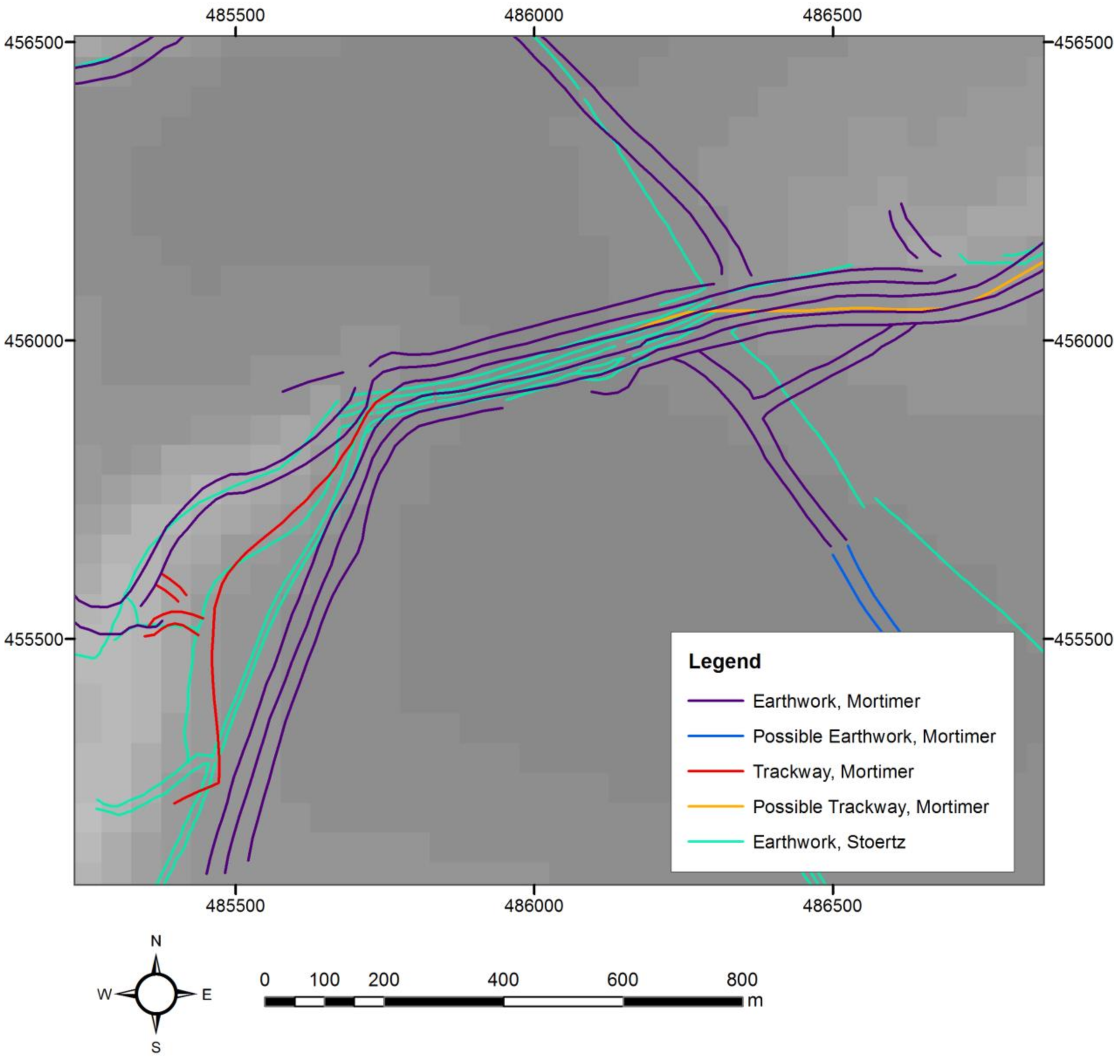


Fig 4.21 Reconciling the earthworks of Mortimer and Stoertz at Huggate Dykes
Contains data after Mortimer (1905: foldout map at front of volume) and Stoertz (1997). Contains Ordnance Survey data © Crown copyright.

Visual inspection of the digitised linear earthworks from Mortimer (1905) and Stoertz (1997) reveals that the data sets cover many of the same alignments (Fig 4.20). When zoomed in to the site level, Mortimer's earthworks and trackways appear to be stretched when compared against Stoertz's data (Fig 4.21). This stretching has been interpreted as the result of the earthworks and trackways being drawn thicker on paper than they were on the ground. The lines that make up each earthwork are farther apart on the map than they should be, which makes the individual banks and ditches easily visible at a scale at which they should appear more like a single line. Thus, although the earthworks and trackways may have been drawn on an accurate map, the symbols used to depict them are not to scale.

Inconsistences between the earthworks mapped by Mortimer and Stoertz required quantification and subsequent investigation at the local, HQ scale (using map regression and satellite imagery). In order to compare the various data sets, it was necessary to establish which lines were represented multiple times and which were unique to only one data set. This was achieved by using ArcGIS tools that search for points of intersection between layers, as well as visual confirmation and manual editing (relevant shapefiles are provided in layer packages of Appendix A). Both of Stoertz's data sets were combined to make a third layer, which removed all LQ lines that were also digitised at the MQ resolution. To determine which of Mortimer's earthworks overlapped with the Stoertz combined LQ-MQ data set, the same processes of intersection and subtraction were performed. Mortimer's earthworks required a significant amount of visual confirmation and inference. Some were approximately 100m away from their Stoertz counterparts, and only by comparing the overall pattern of surrounding earthworks did it become clear that these were duplicates. The result of these comparisons is shown in Fig 4.22.

Mortimer and Stoertz agree on the majority of the earthworks within the area that Mortimer mapped; this was expected, as Stoertz drew upon Mortimer's work. The majority of instances where they differed occurred within the northern portion of the map, where each has recognised earthworks that the other has not. This project's case study line, running from Huggate Dykes past Wetwang-Garton, was almost entirely represented on both data sets. Mortimer does not show the segment of earthwork running perpendicular to Blealands Nook/the Wetwang-Garton earthwork, which is clearly present on Stoertz and Google Earth satellite imagery (Fig 4.23, left). At Wetwang-Garton Slack, Mortimer and Stoertz disagree on several segments with N-S orientations (Fig 4.23, right). For example, Mortimer maps the parish boundary as one of his earthworks, which is not an unreasonable assumption, since there is a later droveway or ladder settlement to the west of its northern portion and a parallel earthwork is located approximately 1km the west. At Huggate Dykes, Mortimer indicates that the monument is multivallate to the east of York Lane—the western edge of the road being denoted by a N-S earthwork, which also serves as a parish boundary—whereas Stoertz maps only one cropmark in this segment (Fig 4.21). The evidence for these additional banks and ditches is examined in Section 6.3.6. Mortimer's trackways were also compared with Stoertz's earthworks and mapped alongside them (Fig 4.20-4.22). Some trackways overlapped with known earthworks, as at Huggate Dykes. As the precise nature of movement across and alongside linear earthworks required further consideration, the trackways were laid to one side for the remainder of the comparison, classification and initial GIS analysis outlined in this chapter. The ability of linear earthworks to also be trackways is re-introduced and discussed in Chapters 5-6.

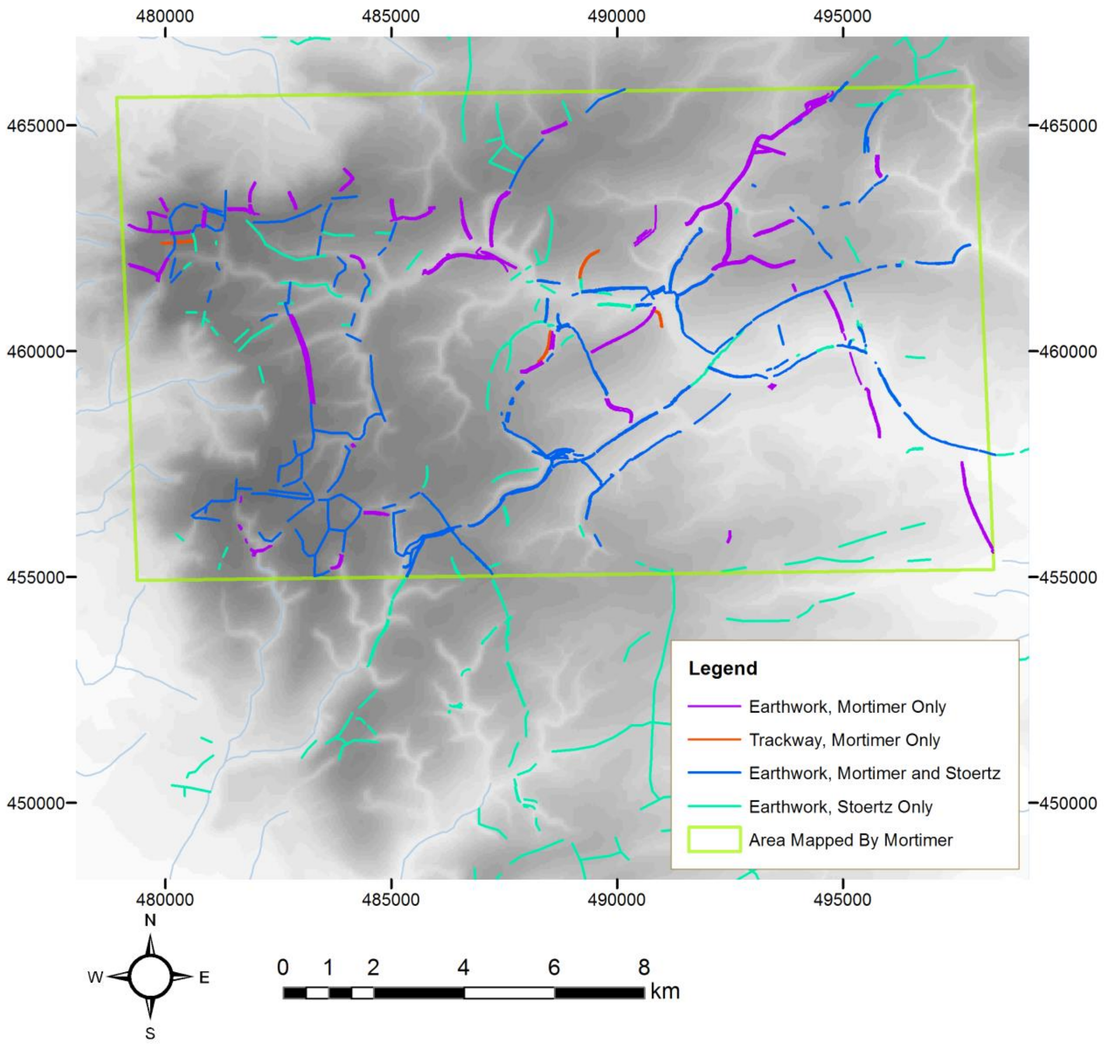


Fig 4.22 Intersection of Mortimer and Stoertz's data sets
After Mortimer (1905) and Stoertz (1997). Contains Ordnance Survey data © Crown copyright.

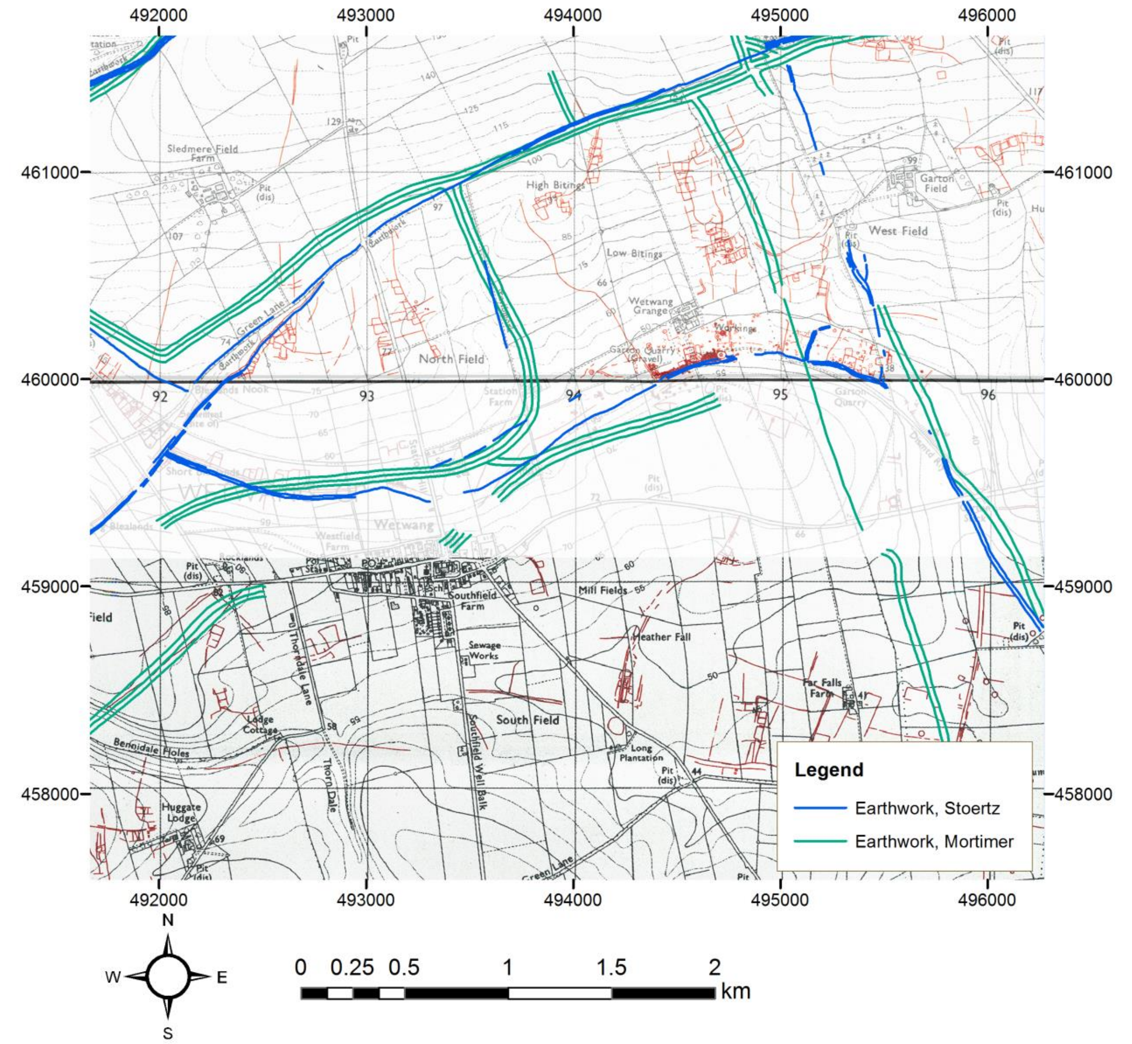


Fig 4.23 Inconsistencies between Mortimer and Stoertz at Wetwang-Garton Slack
After Mortimer (1905) and Stoertz (1997). Basemap from Stoertz (1997). Contains Ordnance Survey data © Crown copyright.

Although it fell outside of this project’s case study area, the linear earthwork at Melton (Fenton-Thomas 2011) has been digitised at MQ (Fig 4.24, in pink). This is due to the fact that an infant burial from its upper fill provided the only radiocarbon date obtained directly from an earthwork on the Yorkshire Wolds (86 cal BC-cal AD 80 at 95.4% or 55 cal BC-cal AD 80 at 94.7%, 1991+/-33 BP, Wk21873, OxCal 4.2.4 and IntCal 13; Bronk Ramsey 2009; Reimer et al. 2013; see Section 1.4.3 and Appendix B). This earthwork appears on Stoertz’s (1997) OS map of the southern Wolds but not on her interpretive figure. The excavation of the site (Fenton-Thomas 2011) revealed a more monumental earthwork than Stoertz’s cropmarks suggested, which highlights the need for HQ investigation and a biographical approach to individual lines.

At both Wetwang-Garton Slack and Huggate Dykes, additional cropmarks were discovered using satellite imagery hosted by Google Earth. The Google Earth Desktop application offered free, easy-to-use satellite and aerial photographic images for East Yorkshire. Imagery from multiple years was available for both case study earthworks, and it was often clear enough for MQ-HQ digitisation; the resolution varied depending on the year and the exact location of the imagery. Section 5.4 explains the digitisation process and presents the cropmarks found around Wetwang-Garton Slack, and Section 6.3.3 discusses the cropmarks at Huggate Dykes which guided the project's geophysical fieldwork (Section 6.3.4). The Google Earth imagery proved useful for contextualising earthwork segments and checking the classifications which were assigned to them (see Section 4.2.2, below), and it led to the discovery of an earthwork to the south of Wetwang-Garton Slack (Fig 4.24, in jade). This earthwork appears as discontinuous ditches on Stoertz's (1997) OS map and appears to branch off of an earthwork which runs parallel to Line A (the Huggate-Sledmere case study earthwork). The circular enclosure to the south of Wetwang-Garton Slack (mentioned above in Section 4.1.2) lies within a gap in the Google Earth earthwork; the relationship amongst the new earthwork, the enclosure and the settlement-cemetery complex at Wetwang-Garton Slack is explored in Section 5.4.

The data sources presented in this section and on Fig 4.24 offered too large a corpus of earthworks for detailed study within the scope of a PhD project. Thus, only the earthworks relating to the case study sites of Huggate Dykes and Wetwang-Garton Slack were studied in great depth. In an attempt to understand these two sites, the earthworks within and around them were classified (Section 4.2.2) at a MQ resolution, drawing primarily on the earthworks digitised from Stoertz (1997), the source which offered the best quality of data for the case study area.

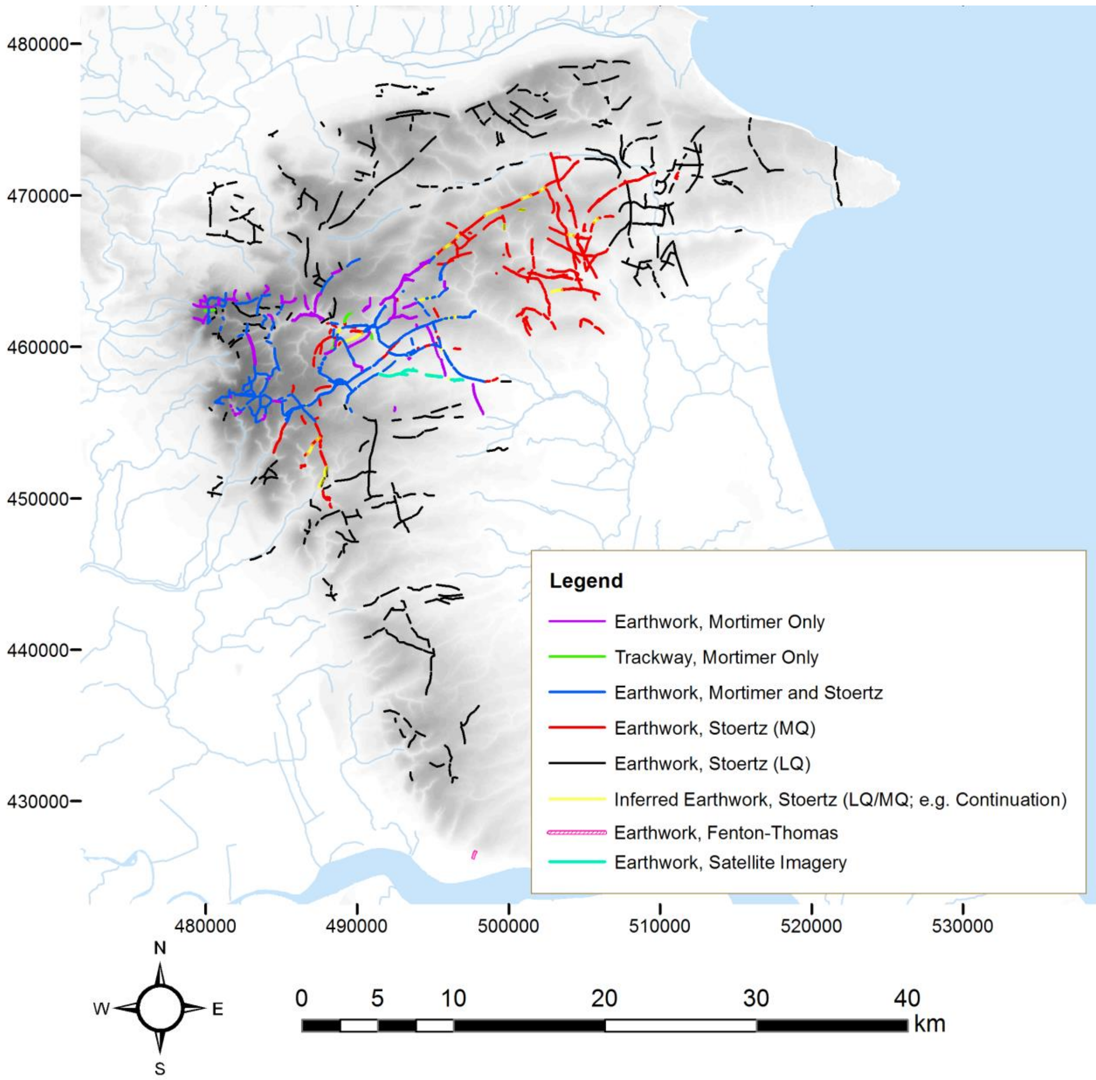


Fig 4.24 Linear earthworks by data source
After Mortimer (1905), Stoertz (1997), Fenton-Thomas (2011) and original work. Contains Ordnance Survey data © Crown copyright.

4.2.2 Classification

In order to understand the variation inherent in the linear earthworks found across the Yorkshire Wolds, it was necessary to develop a classification system that could answer the following questions:

1. What does the earthwork look like?
2. How long is it?
3. Does it form part of a major or minor boundary-routeway?

The first two questions relate directly to the third, and this project hypothesises that: a) the combination of multivallation and length over several kilometres signals a major boundary; and b) the most elaborate sections of earthwork within long alignments constitute special places. The sources drawn upon by this project employed various classification schemes, which provide a useful starting point.

To answer the first question, one must determine how many banks and ditches an earthwork has. As demonstrated in the previous section, Mortimer (1905) took great care to convey this information to his readers, mapping his earthworks with symbols that could be understood even at a broad scale. On Stoertz's regional interpretive figures (e.g. 1997: Fig. 33), the numbers of banks and ditches that make up particular earthworks cannot be discerned, and it is only by undertaking a detailed study of the MQ accompanying maps that one can begin to glean such information. Stoertz (1997) does provide a high-level, conceptual classification: linear earthworks are boundaries and form part of a system of movement and communication that also incorporates trackways and enclosures. Beyond that, classification of individual earthworks falls to the reader.

Turning to the second question, Stoertz (1997: 17) places all linear earthworks into a larger category of 'long linear' features, which she defines as being more than 100m in length and not immediately related to an enclosure (i.e. not a ladder settlement). Thus, a linear earthwork can be anywhere from 100m to several kilometres long as the crow flies, and when that distance is multiplied by the number of banks and ditches present, that distance—and the amount of labour required to excavate and maintain such a boundary—can increase dramatically. Short, topographically-specific linear earthworks called cross-ridge dykes are found on upland ridges throughout Britain; they cut off small promontories, date from the Bronze Age onwards and seem to interact with older features in the landscape, such as stone alignments (Vyner 1994) and round barrows (Tilley 2004). On the Wolds, Dent (2010: 31-32, Fig 29) maps cross-ridge dykes mostly on the northern and north-central Wolds, many of which have become incorporated into longer land divisions (e.g. at Huggate Dykes; ibid.: 31). Longer earthworks could represent more important and potentially early boundaries, which were laid out across the landscape in order to formalise conceptual, socially fundamental boundaries (e.g. land divisions at a kin group or community level). Mortimer (1905: 369-370) suggests that three to four main alignments ran across the Wolds, with the remaining earthworks forming enclosures alongside them (see Section 1.4.3). He argues that these main lines are slightly more monumental than the alignments running between and beyond them, with two to four or more banks and ditches; in contrast, non-main alignments typically have one to three banks and ditches (ibid.). Although Mortimer distinguishes between the two types of alignment, his model sees them working together to enclose the landscape and facilitate the safe movement of people and livestock. This type of movement adds a complicating factor to the process of classification. As mentioned above (Fig 4.20-4.21), trackways that overlap with linear earthworks provide an interpretive problem. In some instances, Stoertz (1997) has interpreted cropmarks to be linear earthworks, but Mortimer (1905) has identified the same features as trackways or trackway-earthwork combinations (e.g. at Huggate Dykes; Fig 4.21). The very concept of linear earthworks as boundaries may be over-simplistic. Perhaps a better model would be one of boundary-routeways, which simultaneously bound and channel movement (see Sections 6.4 and 7.1.1-7.1.2).

The classification system devised during this project was one of nested broad and narrow classifications. Drawing on the ideas of Mortimer and others, the broad classification attempts to identify 'main' and 'secondary' alignments, with the former hypothesised to be slightly older and more fundamental to the organisation of the landscape. The narrow classifications address the numbers of lines (each an assumed bank-ditch pair) within an earthwork. By combining the two levels of classification, it is possible to test whether or not certain alignments deserve to be called 'main lines'—that is, whether or not they received significantly more attention and monumentalisation than the other earthworks around them.

4.2.2.1 Broad classifications

Following Mortimer's (1905: 369-370) concept of main lines, the broad classification level proposed here operates at a regional or landscape scale and attempts to distinguish long, conceptually continuous alignments from subsidiary ones. When plotted in a GIS, Mortimer's data (Fig 4.22) show a series of long, roughly parallel earthworks running SW-NE, and another set of shorter earthworks on N-S alignments joining them together. At the beginning of this project, the earthworks orientated SW-NE were presumed to be the main axes of the overall boundary system, and thus it was hypothesised that they are earlier. These main lines run along both high and low ground, whereas the N-S earthworks seem to bound areas of higher ground, separating them off from the valleys below. Together they form large enclosures and corridors up to several kilometres wide. These patterns are also evident in Stoertz's data (Fig 4.25), and they seem to continue over a larger area than the one that Mortimer mapped. Stoertz's work shows that, across the central Wolds, shorter segments of earthworks (Fig 4.25, jade) run both parallel and perpendicular to the main lines (Fig 4.25, dark pink). This project has tentatively called these 'secondary alignments', although this binary division between main and secondary boundaries or axes of land division may not be the most useful way to characterise the earthworks of the Wolds.

The secondary alignments running parallel along the main lines form corridors c. 600-700m wide (Fig 4.25, light pink shading), which raises the question as to whether or not these earthworks—and corridors created by them—should be considered coaxial. Although they are shorter in length, the secondary alignments are nonetheless significant boundaries. In the eastern part of the study area, they too form a corridor c. 600-700m wide, which runs NNW-SSE and intersects with the alignments of two main lines (Fig 4.25, pink shading at the right of the map). This corridor brackets the monumental enclosures at Paddock Hill and Swaythorpe, suggesting that defended sites like these were closely related to the linear earthwork system, and raising the possibility that these 'secondary alignments' may not be secondary at all. Rather, at least some of the long N-S earthworks may have served the same function as, and may have been constructed with, the main lines. This would distinguish the linear earthworks of the Wolds as being markedly different from the major boundaries in other regions of later prehistoric Britain (e.g. the Dartmoor reaves; Fleming 1987, 2008): in addition to the presence of more than two axes or general alignments, it is possible that no particular axis was more important than the others (see Section 4.2.3). In order to resolve such issues, it is necessary to also ask how monumental—and, presumably, how important—particular earthworks are (Section 4.2.2.2), and how the higher degree of monumentality exhibited by some earthworks (e.g. Huggate Dykes) might reflect more complicated biographies (Chapters 5-6).

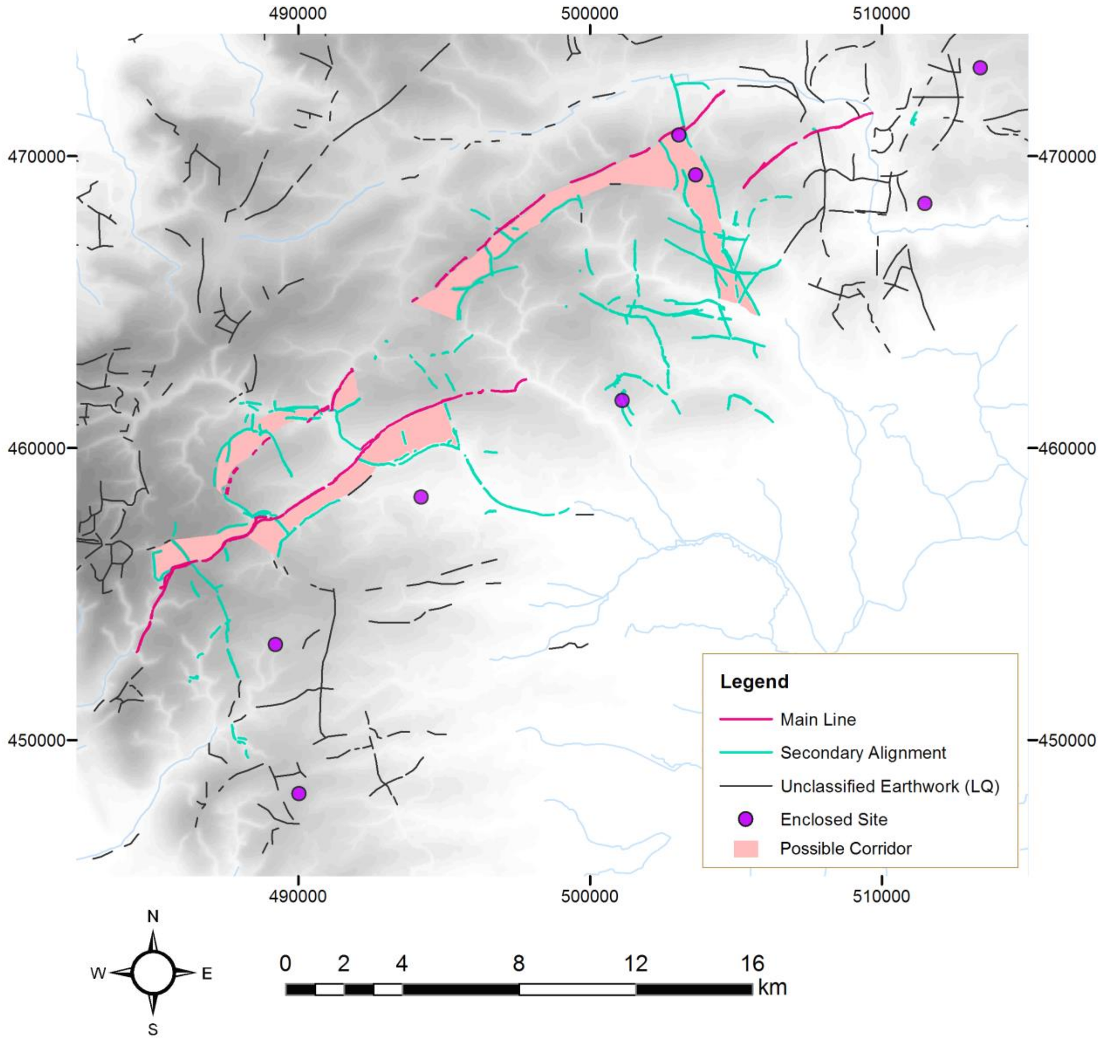


Fig 4.25 Supposed 'main lines' and 'secondary alignments', in relation to enclosed sites
In addition to being conceptual alignments, the possible corridors between main and secondary earthworks may represent zones of activity and movement (see Section 6.4). Earthwork and enclosed site data after Stoertz (1997). Interpretations inspired by Mortimer (1905). Contains Ordnance Survey data © Crown copyright.

4.2.2.2 Narrow classifications

Whereas the broad classifications described above operate on a regional scale, the project's narrow classifications describe the degree of monumentalisation of an earthwork at a site or inter-site scale. The narrow classification process broke down the data into manageable segments and counted the number of lines present in each. Earthworks were categorised based on the number of lines visible in each segment:

Simple	1-2 lines
Complex	3-5 lines
Super-complex	6+ lines

Segments were partially determined by the digitisation process (i.e. gaps created by modern roads or villages were retained), and thus they are artificial. Thus, the overall lengths of each class were compared for a more representative picture.

First, Stoertz's main and secondary MQ data were classified by segment (Fig 4.26; Table 4.2; Appendices A and C). The main line starting at Huggate Dykes and the main line immediately to its north were selected for additional analysis; these seemed to be comprised of six lines (Lines A-F, Figs 4.27-4.29), which are discussed in detail below. Next, the surface lengths of all classified earthworks were calculated, taking topography into account. The number of banks and ditches per segment affected their true lengths. For example, the super-complex earthworks along Lines A, C and D appear to be 1880m long when each segment is measured end-to-end, but when the length of each component line within the segments are considered, they measure a total of 7290m (3.88 times the original estimate). When this scenario is extrapolated across the Wolds, it becomes clear that the number of banks and ditches per line is extremely important.

In total, 360 segments from Stoertz's maps, measuring 262.33km, were classified (Fig 4.26 and Table 4.2). Simple earthworks dominate both the main and secondary alignments (52.27% and 64.20% of the total lengths for each class, respectively). Complex earthworks appear in both broad classes in similar proportions (38.15% and 32.59%), and only the super-complex earthworks are noticeably different (9.59% and 3.21%). This difference is likely even greater, as the single example of a super-complex earthwork in a secondary line is dubious and is possibly a palimpsest of several simple and/or complex earthworks. However, the fact that convincing super-complex earthworks are only represented in the main lines may stem not from a conceptual difference between the main and secondary lines, but rather from the slightly circular line of reasoning which has created the two broad classifications of main and secondary lines (Section 4.2.2.1). Mortimer's

(1905: 369-370) conceptualisation of three or four main alignments across the north-central Wolds rests not only on the length and direction of these earthworks—i.e. being several kilometres long and aligned E-W—but also on their degree of multivallation. Mortimer (ibid.) states that the main lines are composed of earthworks with two to four or more banks, whereas the earthworks which connect the main lines are formed of earthworks with one to three banks (see Section 1.4.3). Therefore, the very definition of a main line relies on the narrow classifications presented in this section, and any patterns observed in other aspects of the earthworks (e.g. topographic location, proximity to round barrows) must be understood in relation to both levels of classification.

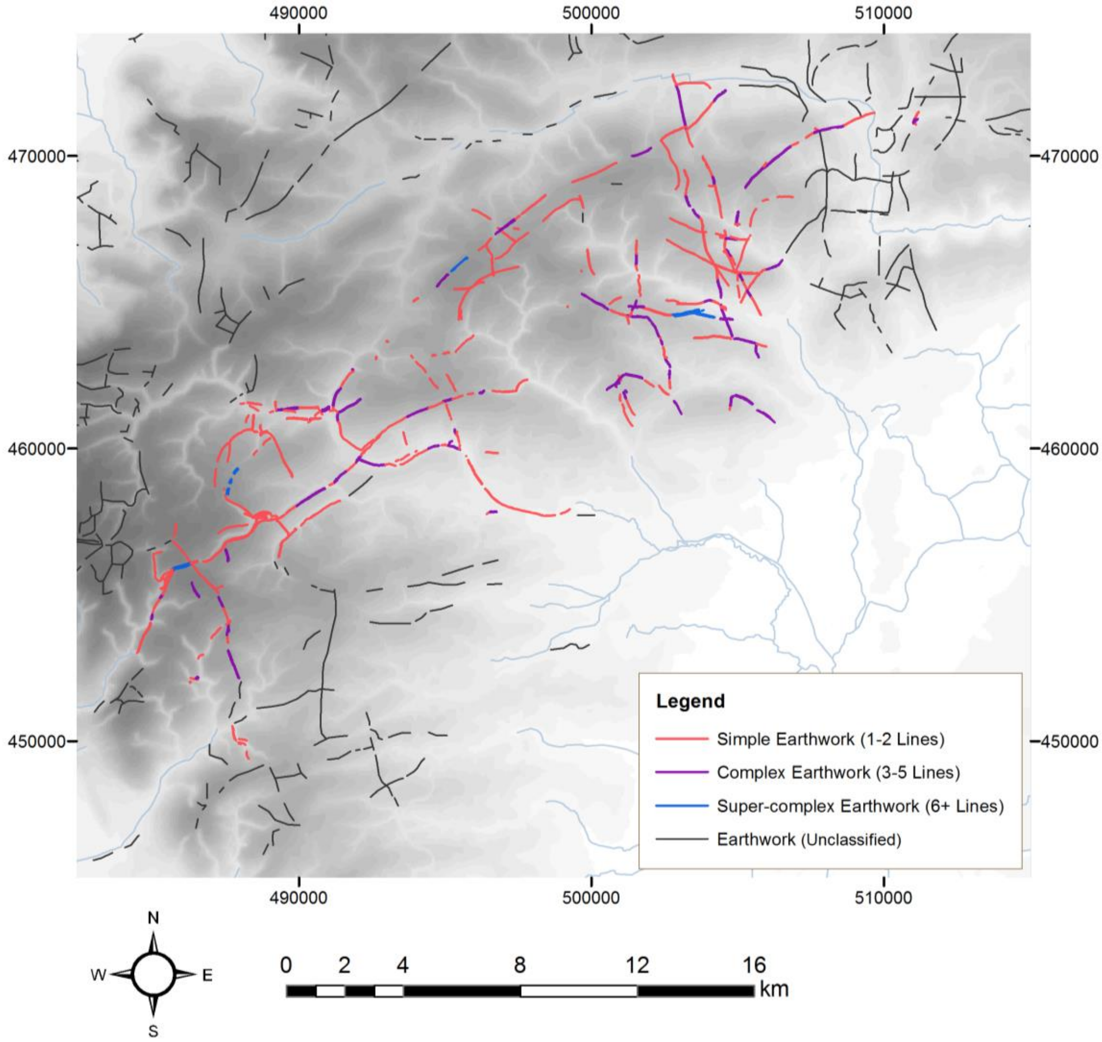


Fig 4.26 Classifying Stoertz's earthworks by morphology
Earthwork data after Stoertz (1997). Interpretation based on original work according to narrow classification scheme. Contains Ordnance Survey data © Crown copyright.

Line Type	Simple (1-2 Lines)				Complex (3-5 Lines)				Super-complex (6+ Lines)			
	Segments		Length		Segments		Length		Segments		Length	
	No.	%	m	%	No.	%	m	%	No.	%	m	%
Main Line	42	54.55	39754.33	52.27	29	37.66	29013.67	38.15	6	7.79	7291.16	9.59
Secondary Alignment	223	78.80	119589.85	64.20	59	20.85	60705.80	32.59	1	0.35	5971.24	3.21
Total	265	73.61	159344.18	60.74	88	24.44	89719.46	34.20	7	1.94	13262.40	5.06

Table 4.1 Earthwork classifications based on data from Stoertz (1997)
The classified MQ earthworks contained 360 segments, totalling 262326.04m or 262.33km in length.

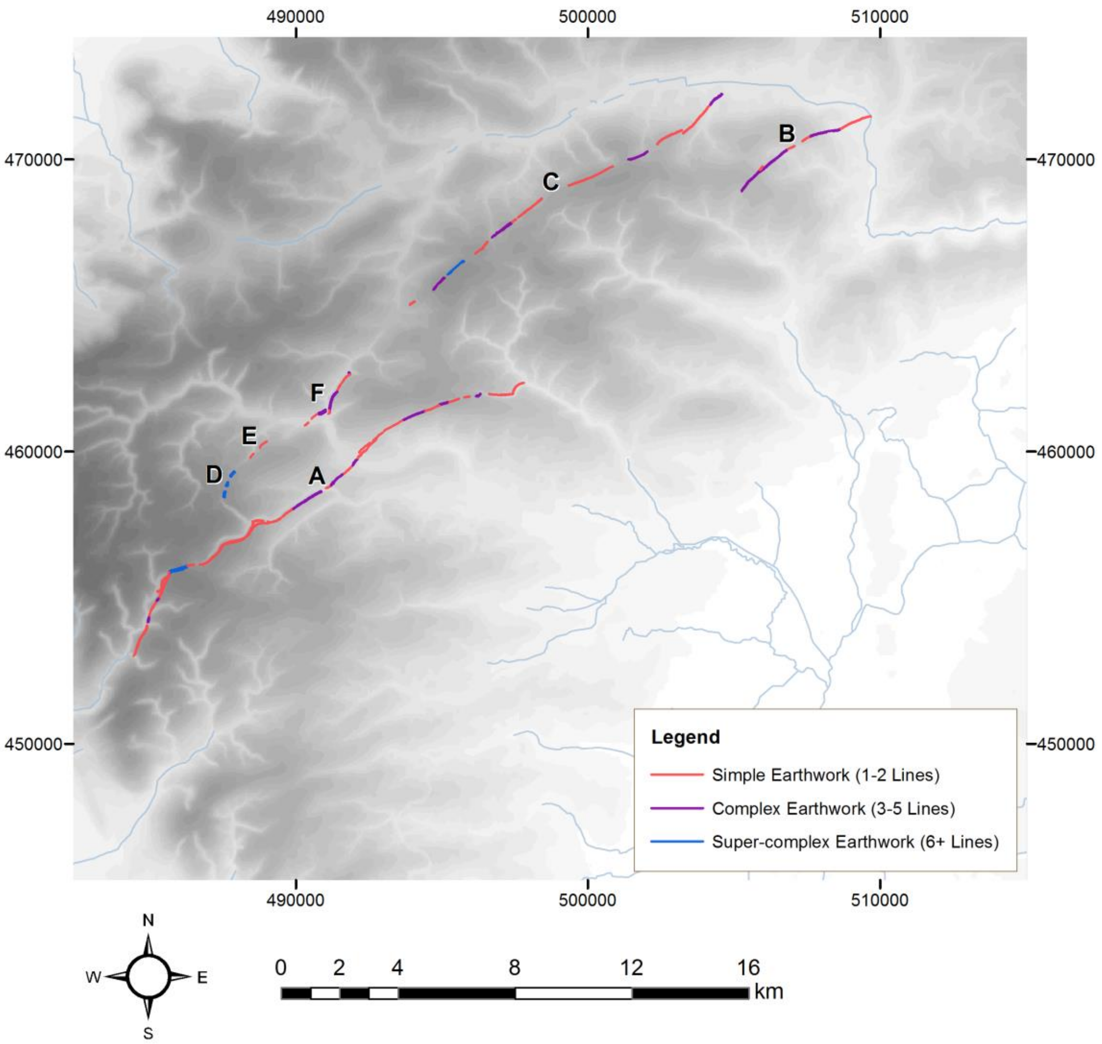


Fig 4.27 Initial classifications of main line segments
See Appendix C for additional Figs showing the narrow classification of Stoertz's earthworks. Appendix A includes the classified ArcGIS shapefiles with which these images were produced (provided in the form of a layer package). Original interpretation based on data after Stoertz (1997). Contains Ordnance Survey data © Crown copyright.

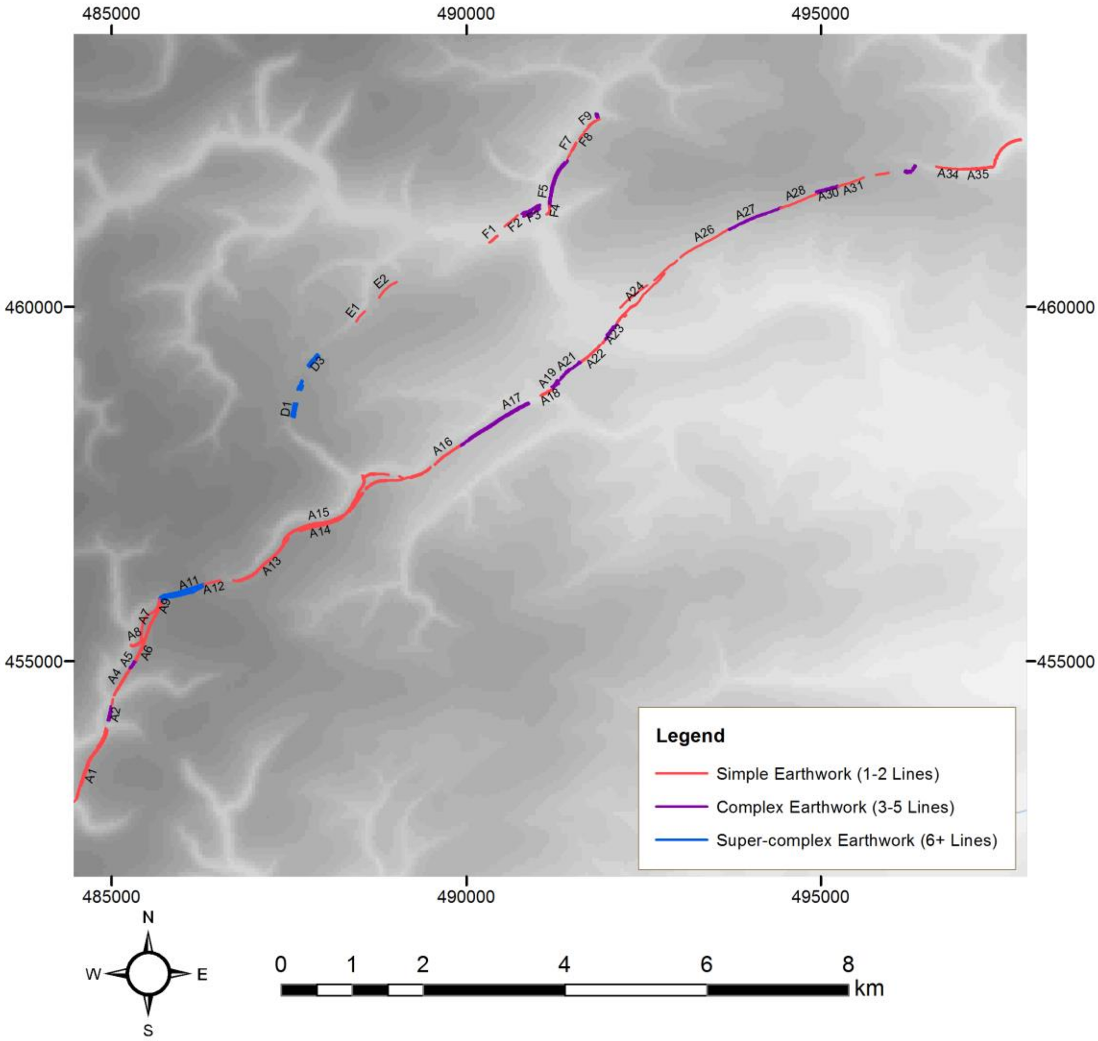


Fig 4.28 Lines A, D, E and F based on Stoertz alone
Each segment was given a unique code (e.g. Huggate Dykes is A11) and classified according the number of lines present on Stoertz's OS maps. Each line is presumed to represent a bank-ditch pair; the term 'line' is used to account for the fact that some segments represent ditches (i.e. many, if not most, of the cropmarks) and others represent banks (i.e. where earthworks are present on the OS basemap, and some of the cropmarks). Original interpretation based on data after Stoertz (1997). Contains Ordnance Survey data © Crown copyright.

a

b

c

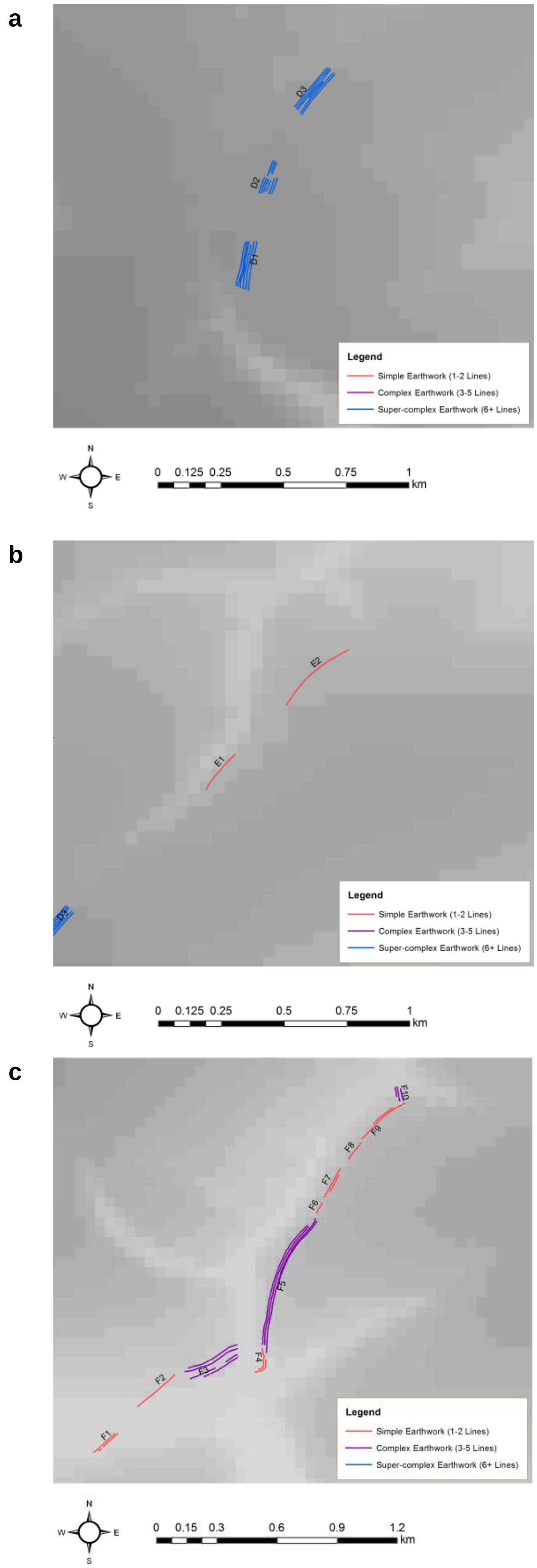


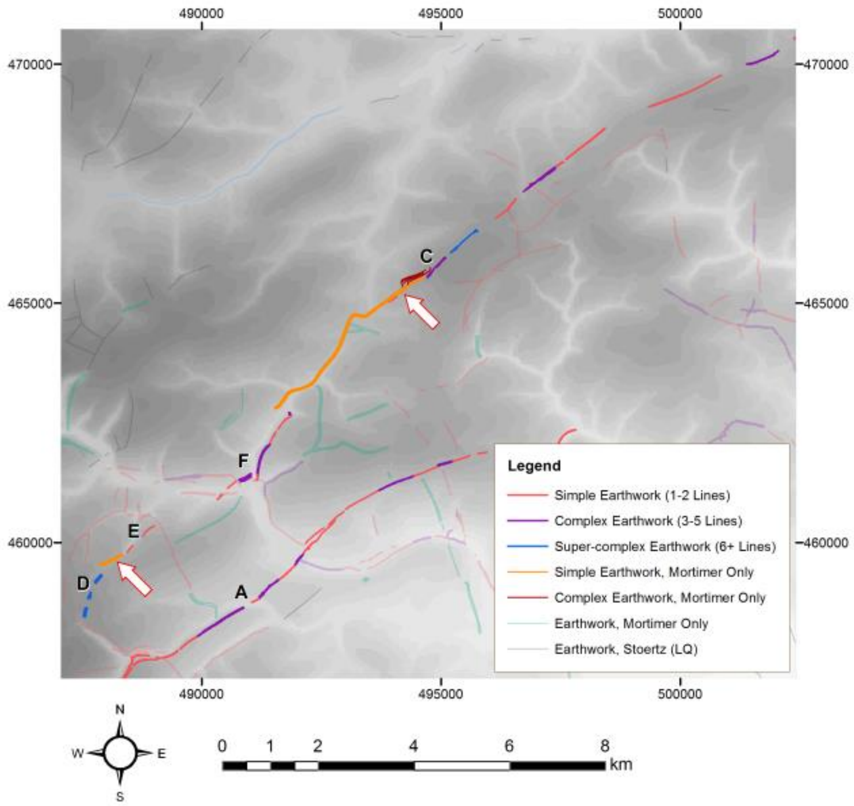
Fig 4.29 Lines D, E and F in detail
Original interpretation based on data after Stoertz (1997). Contains Ordnance Survey data © Crown copyright.

In order to double-check these classifications and fill gaps in the main lines, Mortimer's data were added (Fig 4.30). Although they may have been mapping different features within the same earthworks—Mortimer emphasises the banks and Stoertz presumably mapped more ditches than banks—Stoertz and Mortimer virtually always agree on number of lines present. The notable exception is the segment A12, immediately to the east of the super-complex core of Huggate Dykes. Only simple banks and ditches survive on Stoertz's maps, whereas Mortimer shows that this segment was once complex, with four banks and ditches (Fig 4.21). This earthwork segment is addressed in Chapter 6, which explores the morphology and life history of Huggate Dykes.

Mortimer also provides three segments that fill gaps between Lines D and E, and Lines F and C (Fig 4.30a). These are: a simple continuation of E1 (westwards towards, but not exactly in line with, the super-complex D3); a simple line near end of the complex F10, and overlapping with the simple C1 (ending at complex C2 in east); and a complex line overlapping the end of the previous simple segment, which is near the complex C2 and may possibly be same line. None of these segments alone dramatically alters the pattern of linear earthworks on the Wolds, but together they do support the idea of a single Line D-E-F-C, similar in character to Line A. Line D-E is still separated from F-C by an irregular enclosure at Fimber, but one of Mortimer's segments to the south of the main alignment provides a possible connection (Fig 4.30b). Alternatively, the modern road that runs through the village of Fimber lines up well with E2 and F1, and it might have destroyed a much older linear feature. Or, possibly, there might always have been a gap in this main line. Mortimer (1905: 372) suggests that the Fimber enclosure was designed to be a defended settlement, as its northern earthworks have a berm-like gap between the outer rampart and inner ditch. The enclosed area sits within a small valley, with the earthworks only halfway up the slopes on the northern and southern sides. If defence had been the enclosure's prime purpose, then a location on the higher ground to either the north or south would have been more strategic. Although the valley location does not preclude the earthworks' defensiveness, there must have been additional factors constraining the choice of location. Perhaps if there had been a prehistoric settlement at Fimber, as Mortimer suggests, then the valley was chosen because it was sheltered. If Line D-F was perceived as being continuous with Line F-C (Fig 4.31), then this enclosure could have been a stopping-off point for people travelling along a single route-way—a sort of prehistoric rest stop where farmers driving their flocks could stop for food, water and shelter from the elements. What is not clear is whether or not this hypothesised enclosed settlement would have been constructed before or at the same time as the other earthworks along Line D-E-F-C. It may already have been a special place that was absorbed into the alignment, or it may have derived its importance from its mid-line location. The enclosure has a wide gap at its eastern end, which provides access into Bessing Dale. Walking south-east through Bessing Dale (Fig 4.32) leads directly to the junction of Blealands Nook and Line A (2km away) and the Wetwang-Garton earthwork (4.5km to the edge of the 1980s excavations). If there had been occupation or agricultural activity within the enclosure contemporary with the settlement at Wetwang-Garton, then the natural topography and surrounding earthworks would have provided easy access between the two sites.

Both the narrow and broad classification schemes outlined above attempt to quantify and qualify the linear earthworks of the north-central Yorkshire Wolds. By classifying them, it is possible to tease out patterns within the vast, complicated data sets offered by Stoertz (1997) and Mortimer (1905). The classifications suggest that the most monumental earthworks—the ones which would have required the most labour and which may have held the most meaning—seem to have been restricted to long, conceptual alignments which cross the Wolds. However, in order to avoid what Wylie (1989) calls the *interpretive dilemma*, or the problem of already having interpreted something as soon as one decides to interpret it, these classifications should be treated as neither unequivocal nor all-encompassing. As the site biography of Huggate Dykes reveals (Section 6.3, especially 6.3.6), the super-complex, main line segment A11 spent much of its life *not* being a super-complex earthwork, and whether or not it began as a main line is unclear. In order to understand and qualify such classifications, contextual information and a detailed life history for individual earthworks are essential.

a



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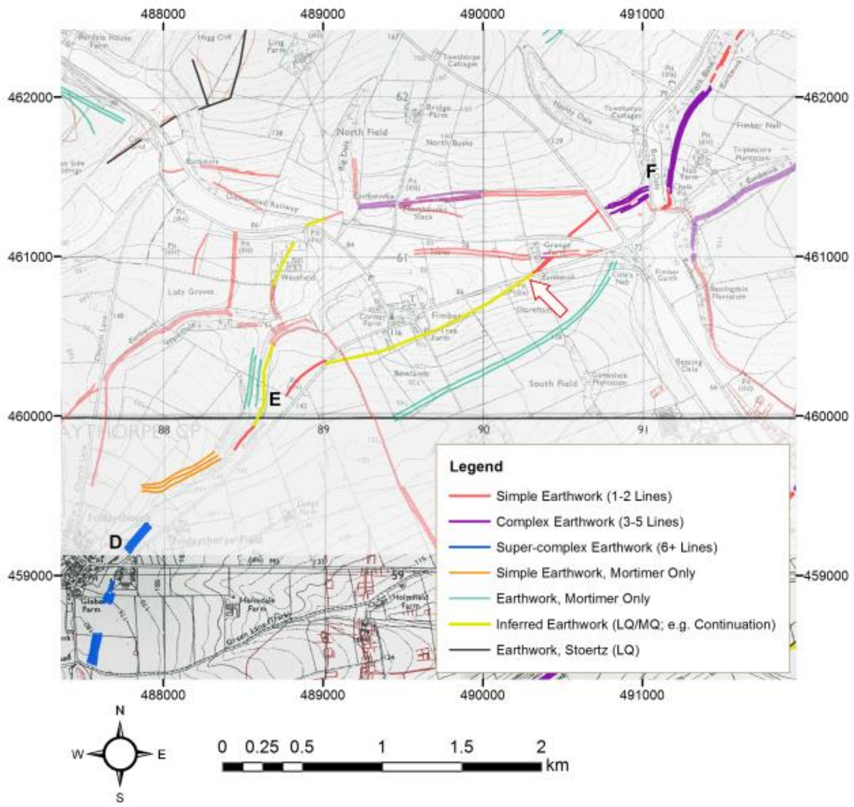


Fig 4.30 Adding Mortimer’s earthworks and making connections
Mortimer’s earthworks (a, indicated by arrows) show that Lines D and E were once continuous. The same applies to F and C. Lines D-E and F-C might have been intended as a single alignment (D-E-F-C). They are separated by an irregular enclosure around the village of Fimber (b). Hypothesizing that they form one main line, the inferred path of the alignment is indicated by an arrow. Original interpretation based on data after Stoertz (1997) and Mortimer (1905). Contains Ordnance Survey data © Crown copyright.

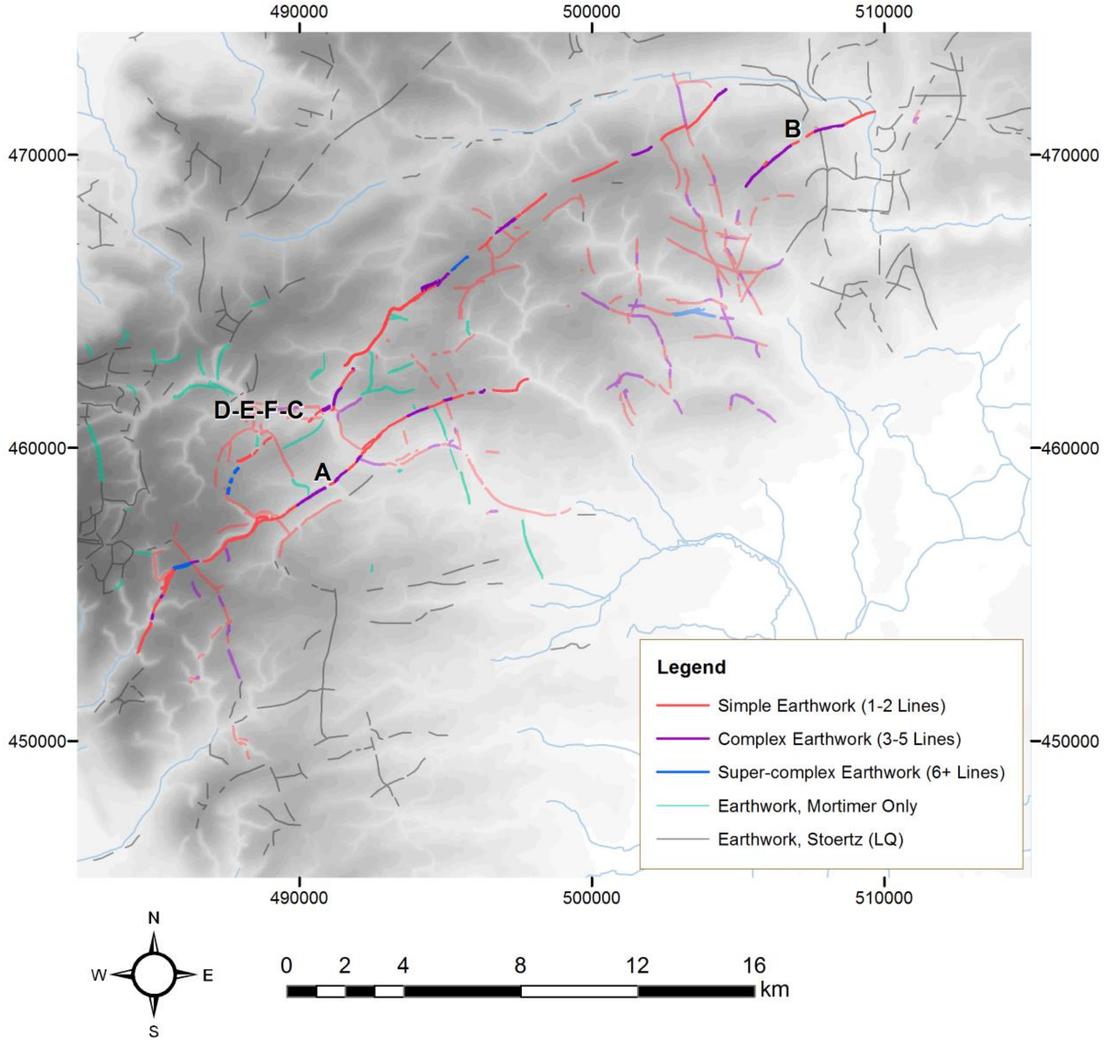


Fig 4.31 Revised plan of classified earthworks
Original interpretation based on data after Stoertz (1997) and Mortimer (1905). Contains Ordnance Survey data © Crown copyright.

Fig 4.32 Route from Fimber enclosure to Wetwang-Garton Slack
The 4.5-kilometre route from Fimber to Wetwang-Garton Slack is marked in red and crosses Line A. Original interpretation based on data after Stoertz (1997) and Mortimer (1905). Contains Ordnance Survey data © Crown copyright. Satellite imagery from Google Earth © 2015 Getmapping plc.

4.2.3 Location and topography

Linear earthworks exist not as isolated monuments, but in relation to the natural topography and other anthropogenic features in the landscape. As demonstrated at the beginning of this chapter, the Yorkshire Wolds would have been a highly monumentalised landscape by the end of the Bronze Age, and the land may have been divided up with conceptual boundaries long before the earthworks were constructed. Previous authors (e.g. Mortimer 1905, Halkon 2013) have argued that earthworks would have controlled or facilitated access to water sources, which were essential for cattle, and it seems plausible that particular tracts of land (e.g. sunny, protected from strong winds and not on a steep slope) would have been considered more desirable than others for living and farming. Thus, the separation of those desirable tracts of land from the rest of the landscape—the creation and renegotiation of places—may be inferred from the locations of some earthworks.

Linear earthworks are found at various elevations on the Wolds (Fig 4.33), and the elevation of an individual line may vary greatly as it crosses ridges and slacks. This is particularly evident in Line A, the main line that runs eastwards from Huggate Dykes (Fig 4.34a). The western portion of Line A closely hugs the contours of high ground between and along steep valleys (Fig 4.34a: red, yellow and orange), and where the topography becomes gentler to the east, the alignment follows its original trajectory (Fig 4.34a: yellow and green). Of the classified earthworks (detailed above), both the main and secondary lines follow this pattern of descending and ascending slopes across several colour groups (Fig 4.34). If they were used to control or facilitate movement (see Section 6.4), then a single earthwork could have connected high and low ground, allowing people and animals to move between the two in a socially acceptable way. Turning to the narrow classifications (Fig 4.35), simple and complex earthworks are found at all elevations. Super-complex earthworks are typically restricted to high ground (Fig 4.35c: red and orange). The exception to east of map (Fig 4.35c: yellow) is the dubious example described above; this segment could possibly be comprised of several simple or complex lines that overlap. Huggate Dykes—the only super-complex earthwork over 200m—is located on the highest ground along Line A, which may indicate that good visibility was important during the creation and elaboration of this monument (see Section 6.3.2).

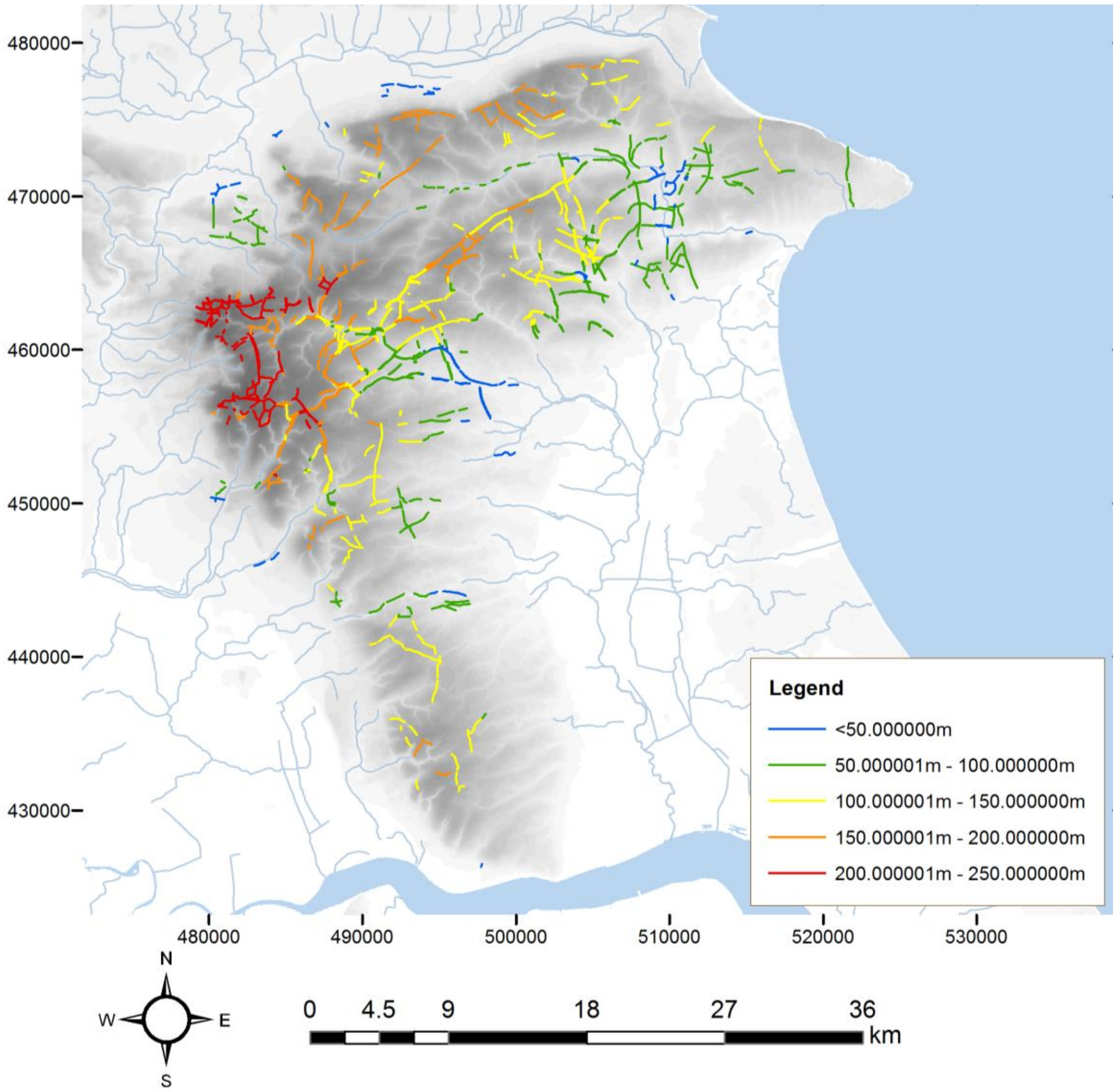


Fig 4.33 Earthwork elevations
Elevations (metres above OD) of all earthworks (LQ and MQ). These elevations were calculated using the Z_Max property (highest point) of each segment. The colour of a segment represents the highest elevation found along it; thus, a segment that runs from 195mOD to 205mOD will be shown entirely in red. Earthwork data after Stoertz (1997), Mortimer (1905) and Fenton-Thomas (2011). Contains Ordnance Survey data © Crown copyright.

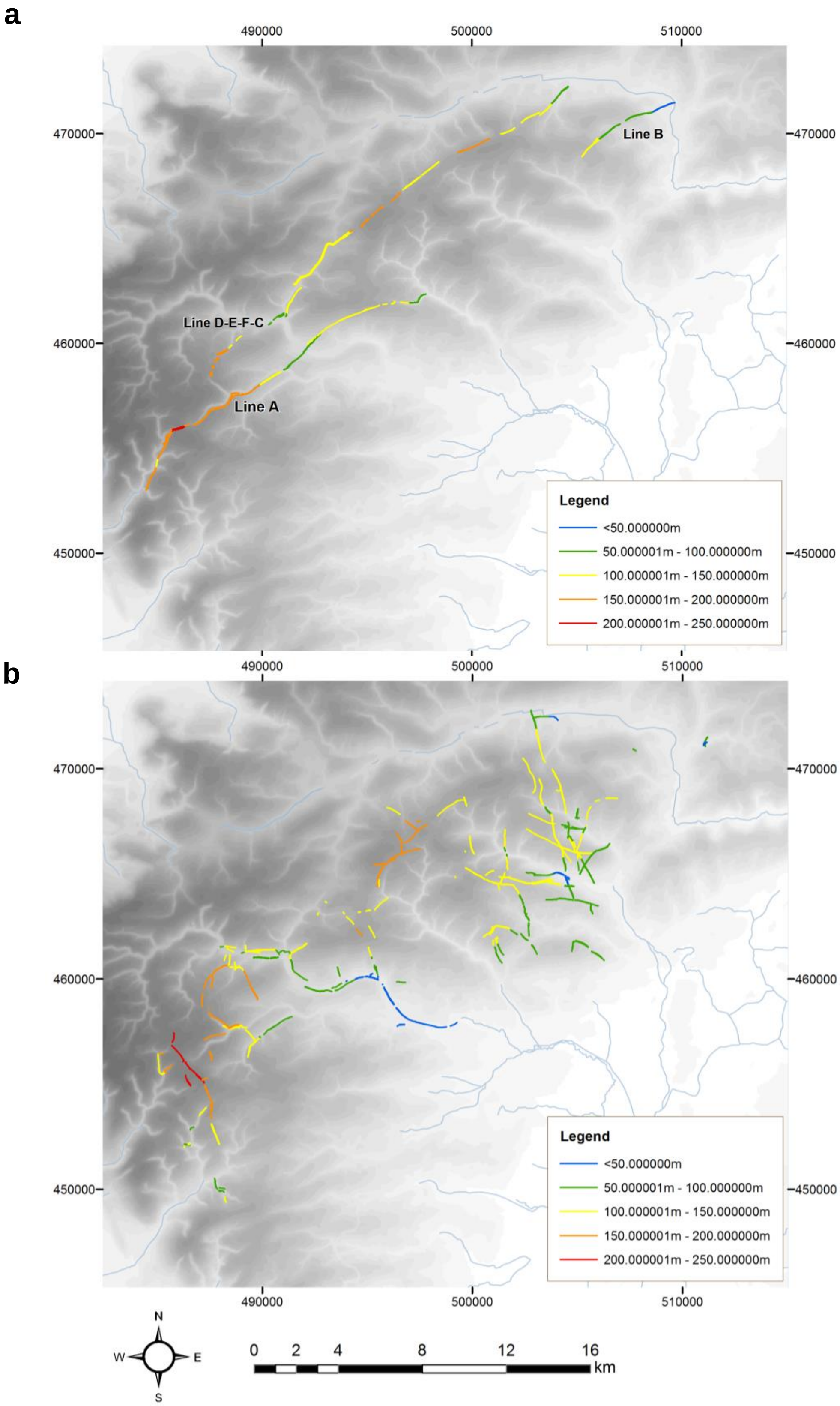
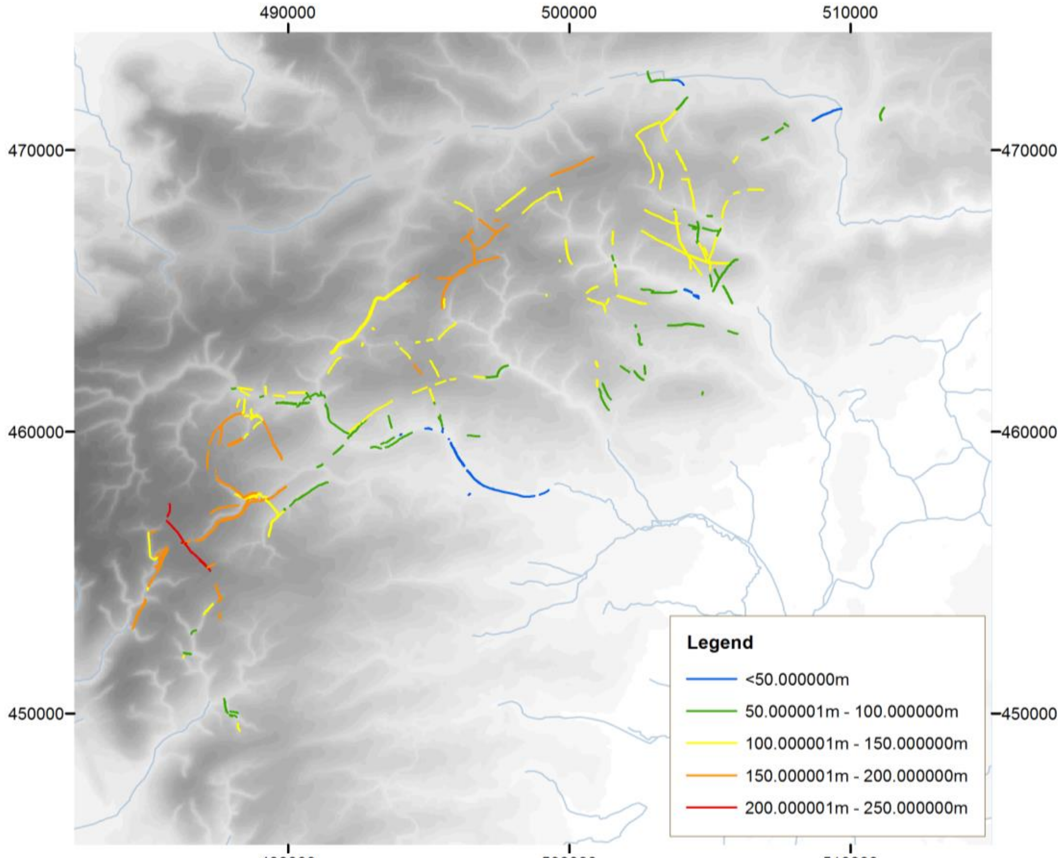


Fig 4.34 Earthwork elevations by broad classification
Elevations (metres above OD) of (a) main and (b) secondary lines. Both main and secondary lines occur at all elevations. Earthwork data after Stoertz (1997) and Mortimer (1905). Contains Ordnance Survey data © Crown copyright.

a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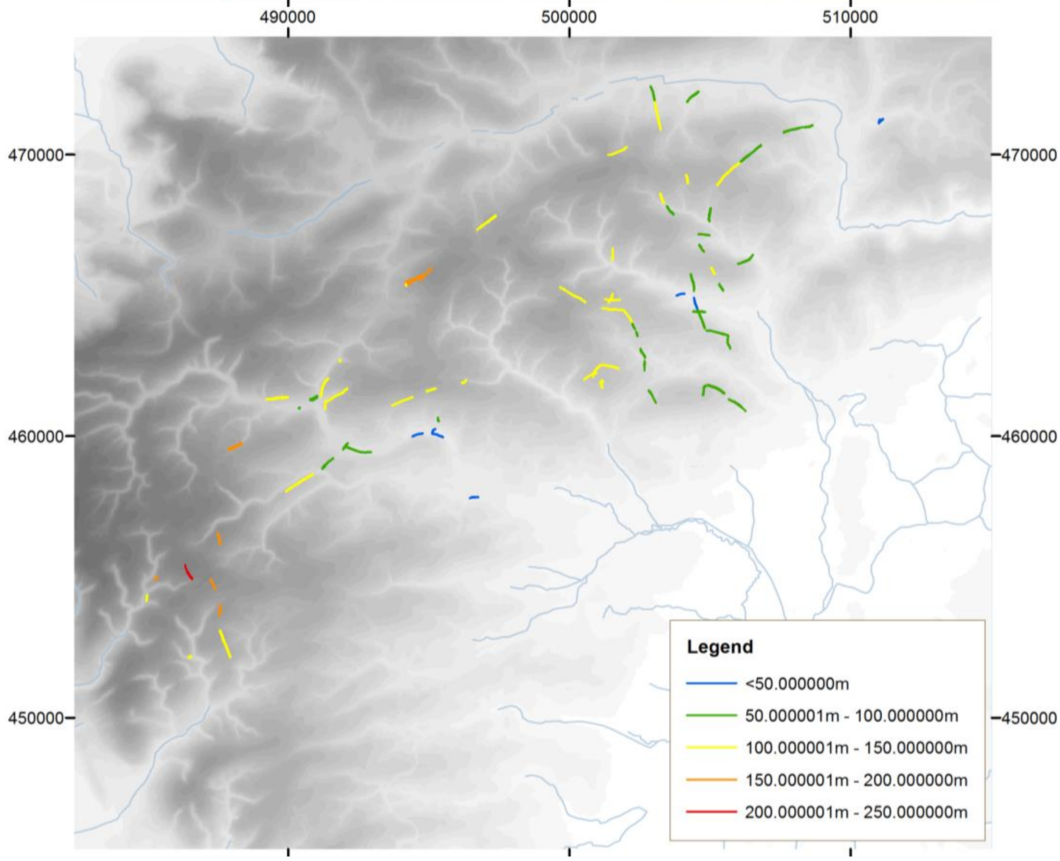
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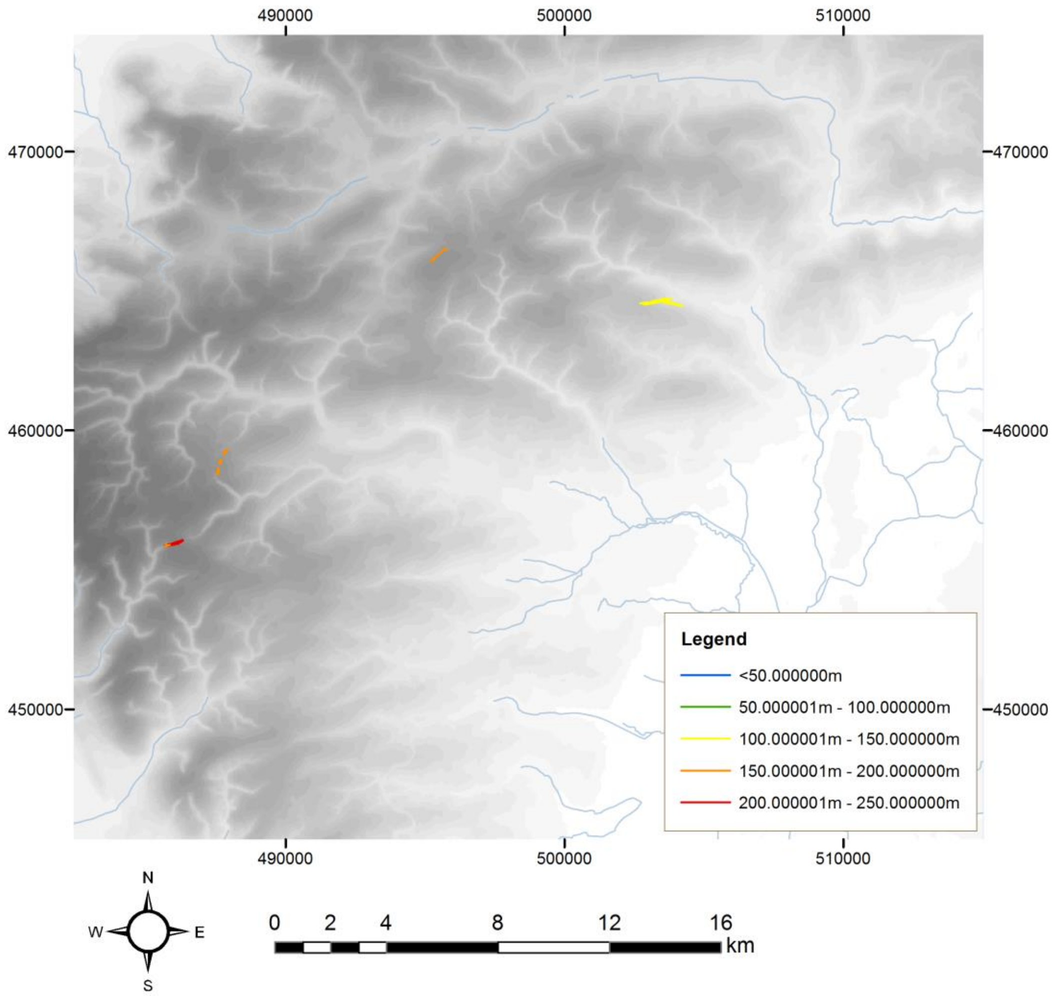


Fig 4.35 Earthwork elevations by narrow classification
Elevations (metres above OD) of (a) simple earthworks, (b) complex earthworks and (c) super-complex earthworks. While simple and complex earthworks occur across all elevations, super-complex earthworks appear to be restricted to higher elevations. Earthwork data after Stoertz (1997) and Mortimer (1905). Contains Ordnance Survey data © Crown copyright.

Although it may have been an important factor in the creation of special places, elevation alone does not seem to constrain or dictate earthwork location. Natural features and other monuments, both earlier prehistoric and contemporary, would have influenced the positioning of earthworks. Pit alignments and trackways are often incorporated into linear earthworks, so the latter may have emphasised existing boundaries and routeways. Linear earthworks were not constructed in empty landscapes. They elaborated and renegotiated already-ancient places, such as barrow cemeteries from the Early Bronze Age, and control of sacred or culturally-relevant sites may have been as important as the control of water sources and good agricultural land; indeed, these two types of control are not mutually exclusive, and likely would have been intertwined.

Paleochannels and valley bottoms full of sediment may have been relatively easier to dig than the chalk bedrock that characterises the Wolds, and indeed some earthworks might have been constructed in a way that exploited localised differences in geology. Segment A12, immediately to the east of the core of Huggate Dykes, appears to follow a portion of a paleochannel. The Wetwang-Garton Slack earthwork follows a valley bottom, and despite the amount of hillwash that would have accumulated there, the construction of the earthwork still would have required excavation through the chalk bedrock (see Chapter 5). However, it appears that on the north-central Wolds, following the curves of the topography and choosing a location related to prominent anthropogenic features—namely, Early Bronze Age round barrows—were more important to the earthwork-builders than exploiting the subtleties of geology. Where earthworks descend into valleys of make use of paleochannels, they also continue beyond these features.

The beginning of this chapter explored the creation of monumental, organised landscapes on the Yorkshire Wolds before the first millennium BC, the remains of which would have been present by the time the linear earthworks were constructed. The proximity of certain earthworks to barrows is not unique to the Wolds; Tilley (2004) noted relationships between the two monument types in Wiltshire, and Mortimer's plan of the earthworks at Cockmoor Hall on the North York Moors suggests an intimate connection (1905: 370, 372, Pl. C Fig. Dd; see also Fig 1.12). In addition to possibly persisting as special places where mythical ancestors were buried or where legendary events occurred, barrows and other earlier monuments may have become useful way-markers along conceptual routes and boundaries by the first millennium BC. They might have facilitated movement through the landscape, indicating where one should or should not go, so it is not surprising that many linear earthworks are located alongside or near earlier monuments (Fig 4.36). Not all earthworks follow this pattern. For example, Line A is located within 400m of barrows at Huggate Dykes, but then continues to the east without encountering any earlier monuments for approximately 4km (Fig 4.37). In contrast, its tributary line at Wetwang-Garton Slack is largely within 300m (and almost entirely within 400m) of Bronze Age barrows (Fig 4.37). The development of these two meso-landscapes is discussed in detail in

Chapters 5 and 6. The proximities mapped in Figs 4.36 and 4.37 may be deceptive, though: Huggate Dykes does not have any earlier monuments within 300m, but Chapter 6 argues that the earthworks there were constructed in an already-ancient place. The fact that most of the barrows near Huggate Dykes are 400m or more away need not mean that the land there was less imbued with meaning. Crucially, these maps fail to model movement and visibility, which may have affected how particular earthworks were perceived to be related to earlier monuments, and which can only be addressed on a case-by-case basis.

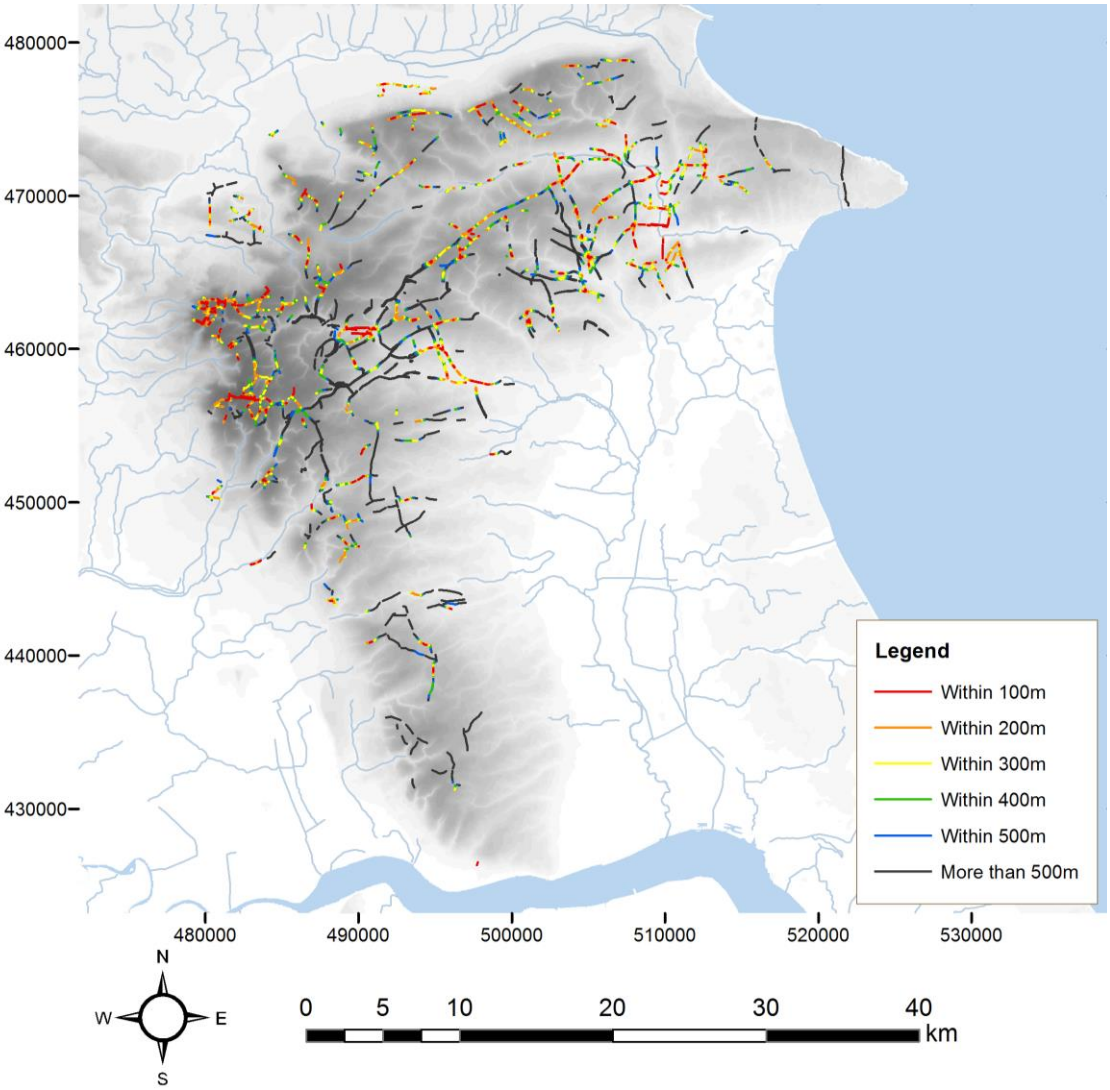


Fig 4.36 Proximity to earlier monuments across the Wolds
Earlier monuments include Neolithic and Bronze Age barrows, henges, possible and confirmed cursus monuments and the Rudston Monolith. Pit alignments are not included. Although many earthworks are within 500m of an earlier monument—especially on the northern Wolds around the Gypsey Race and at the north-western fringes of the Wolds—the case study area includes earthworks which are almost entirely farther than 500m away from earlier monuments (see Fig 4.37). Earthwork data after Stoertz (1997), Mortimer (1905) and Fenton-Thomas (2011)). Contains Ordnance Survey data © Crown copyright.

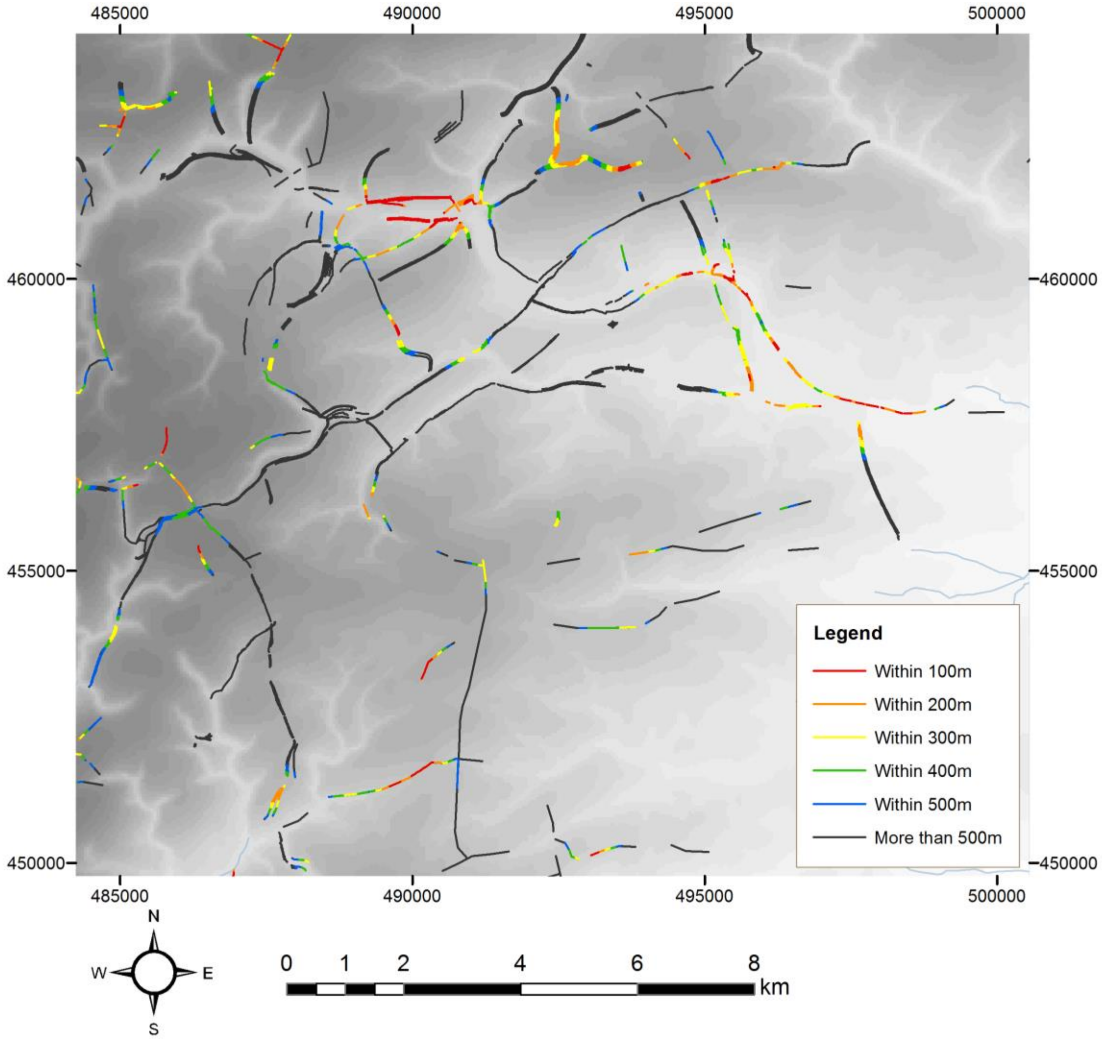


Fig 4.37 Proximity to earlier monuments near Huggate Dykes and Wetwang-Garton Slack
The earthworks of the case study area are not uniformly related to earlier monuments. For example, Line A is within 500m of Bronze Age barrows around Huggate Dykes and at its eastern end to the north of Wetwang-Garton Slack, but its segments in between both ends are not located alongside earlier monuments. The earthwork at Wetwang-Garton Slack is almost entirely within 400m of earlier monuments. Earthwork data after Mortimer (1905) and Stoertz (1997). Contains Ordnance Survey data © Crown copyright.

To understand why linear earthworks developed where they did, we might question whether or not particular earlier monuments or places *caused* people to build earthworks near them. Ch'ng and colleagues (2014) argue that stigmergy may explain why certain places or monuments continue to attract attention and activity over time. The concept of stigmergy, borrowed from environmental science, posits that initial conditions within an environment affect future actions that occur within that environment, through a process of 'coordination without direct communication' (Ch'ng et al. 2014: 3). In archaeological terms, the very presence of something anthropogenic in an otherwise natural landscape may influence people's decisions concerning that landscape. The actions that they take within that landscape will be reactions to what is already present, and over time people will indirectly communicate with each other. This model integrates human agency, the material agency of a landscape and a time dimension, looking for connections amongst different actors who do not directly interact.

Applying the concept of stigmergy to linear earthwork landscapes does not necessarily mean that earlier monuments were still experienced as special or ancestral by the first millennium BC. Although people in the Late Bronze Age or Early Iron Age may have reinterpreted and renegotiated existing myths surrounding barrows and henges, living with and constructing boundaries around these earlier monuments also would have generated new stories and meanings that were distinct from their ancient counterparts. Earthwork-builders may have been drawn to particular locations, such as Wetwang-Garton Slack, simply because there was already something present there. They may have redefined the use of the land, allowing their animals to graze and defecate amongst the graves of ancestors, without even considering the deceased. However, the evidence presented in Chapters 5 and 6 suggests that earlier monuments were still special and relevant to the identities of the people who lived with linear earthworks.

When the earthworks of the Wolds were constructed, factors such as topography, earlier monuments and the development of particularly special places such as Huggate Dykes (see Chapter 6) seem to have been more important than achieving an overarching, coaxial pattern of orientation. It is difficult to determine which earthworks, if any, formed the major axis or axes of land division on the north-central portion of the Wolds, as the very concept of main lines is flawed. It relies on the circular argument that the most important alignments are the most monumental, and that the most monumental segments have more banks and ditches because they form more important boundaries (Sections 4.2.2.1 and 4.2.2.2). Possible corridors or large enclosures formed by parallel earthworks (Fig 4.25) run not only in a SW-NE direction along the main lines, but also perpendicular to the main lines between secondary alignments. Whereas the extensive Bronze Age boundary systems of other regions in Britain tend to be coaxial, with fields laid out along strong, parallel axes (e.g. Dartmoor: Fleming 1987, 2008; SE Britain: Bradley and Yates 2007, Yates 2007; Yorkshire Dales: Brown 2014; Fleming 2010: 20-35; see also Brück 2001; Gosden 2013), the earthworks of the Yorkshire Wolds do not appear to fit this model.

The fields or smaller enclosures which developed alongside particular Wolds earthworks are generally thought to date from the mid- to later Iron Age (as at Wetwang-Garton Slack; Chapter 5), and therefore there could have been a considerable time gap between the construction of the large-scale land divisions—linear earthworks—and the smaller sub-divisions which marked out plots of land—particularly, ladder enclosures, as well as some rare examples of coaxial fields (for instance, those around Wetwang-Garton Slack; see Atha 2007: 145-151). When the linear earthworks were first created, smaller landscape divisions such as fields and the limits of settlements may have been denoted by natural topographic features, or by conceptual boundaries between the earthworks and earlier monuments. These boundaries may have been fuzzy; animals may have been hefted to particular locations or actively herded (see Section 3.1.2), and if the region's population had been widely dispersed, with large areas of the Wolds lacking permanent settlements, then conflicts over access to farmland may have been avoided without the need for visible, tangible field boundaries. Alternatively, fields might have been marked out with physical but ephemeral boundaries, such as hedges or fences (see Wigley 2007's pit alignments in the Welsh Marches, or Løvschal 2014's discussion of landscape division across NW Europe), which may have been more permeable and changeable than linear earthworks, and which have left no archaeological traces—or at least none which are visible with macro-scale tools such as aerial photography and satellite imagery. In the absence of evidence, the question remains: exactly how were communities using the land around and between the linear earthworks of the Wolds in the Late Bronze Age and Early Iron Age? Using GIS to model particular activities which are characteristic of rural, agricultural communities may provide some answers.

In addition to bounding or enclosing large portions of the landscape, it could be argued that linear earthworks were also designed to direct movement. This might be inferred from their close association with trackways (see Chapter 6, especially Sections 6.3.6 and 6.4; Mortimer 1905; Fenton-Thomas 2005) and the later reuse of some earthworks as roads (as at Wetwang-Garton Slack, Chapter 5). To test this line of reasoning, a least cost analysis was performed on the land between Huggate Dykes and the settlement at Wetwang-Garton Slack. A least cost analysis is a model that assesses which areas of or paths across a surface are the most and least costly, given a set of weighted variables (e.g. slope, time). This model proposes a hypothetical journey from Huggate to Wetwang-Garton, where the slope and elevation are the only variables of consequence to the traveller. In making this journey, the traveller might wish to avoid steep slopes, especially if he or she had to descend one only to immediately climb up another—a situation which might occur upon arriving at a steep slack like the one to the west of Huggate Dykes. This would require bursts of energy, whereas changes in elevation, which are no greater than 250m across the extent of the Wolds, would necessitate endurance. Given that during this journey from Huggate to Wetwang-Garton the traveller would generally be descending, rather than climbing, from west to east, changes in elevation might be of less importance. Thus, in the model slope was weighted as being 70% of the total cost, and elevation 30%. Fig 4.38a shows which areas of the land would be the least and most costly; this cost surface was then used to calculate potential routes across the land, which could also be broken down by cost. The resulting least cost paths (Fig 4.38b) follow the gentlest contours of the land. The least costly paths, shown in green, closely resemble the paths of the linear earthworks between Huggate and Wetwang, including both the known Wetwang-Garton earthwork and the inferred earthwork to the south of Wetwang village (discussed in Sections 4.2.1 and 5.4). The model does not take the earthworks into account and thus these paths were produced independently. Therefore, it is reasonable to assume that the people who laid out these earthworks had similar priorities to those assumed by the model, namely ease of movement. However, this simple least cost model does not take into account the time that it would have taken to make any particular journey, nor does it address social factors such as friendly/enemy territory, taboo places, the aesthetics of the land, or personal preferences. These are explored in Section 6.4.

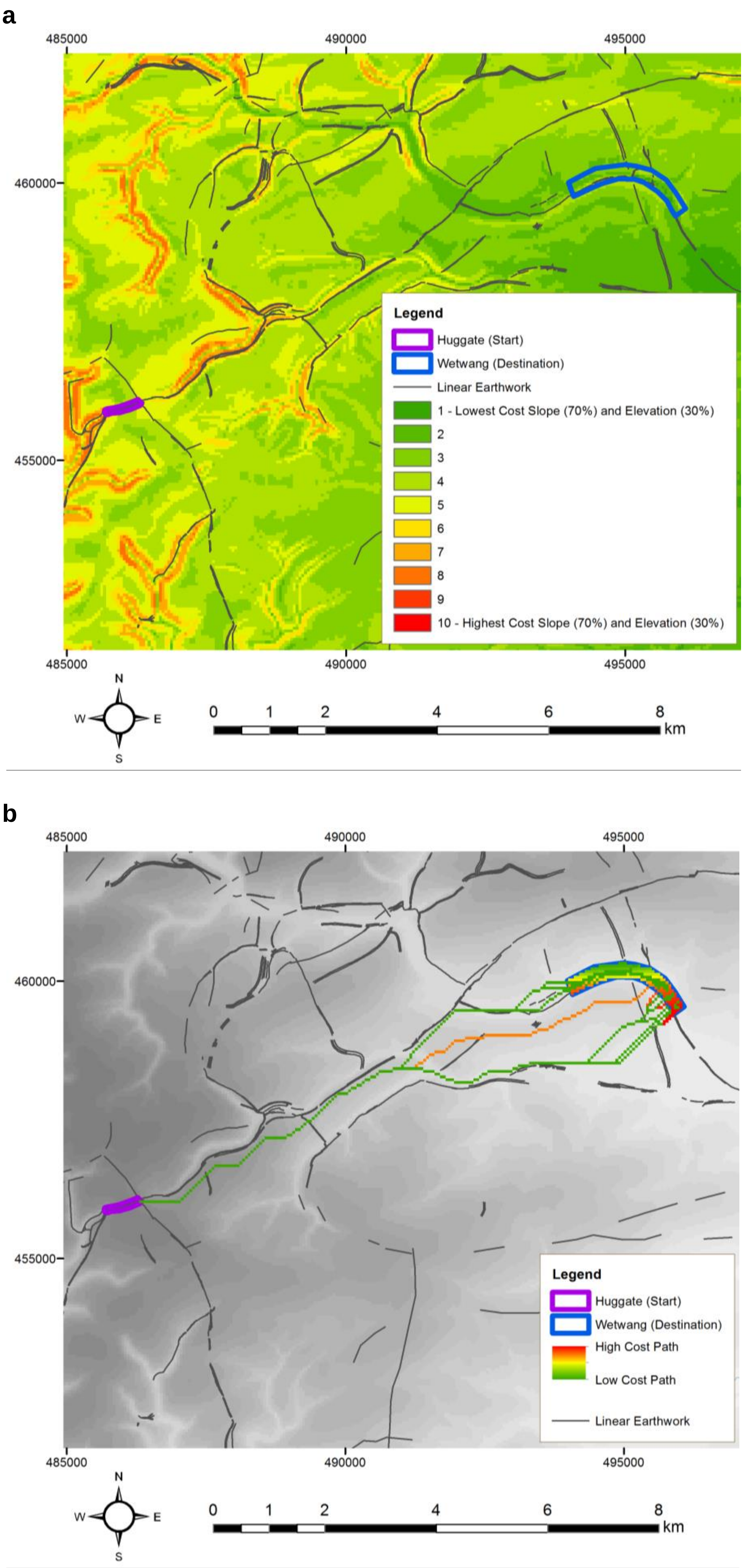


Fig 4.38 Least cost analysis of potential paths from Huggate Dykes to Wetwang-Garton Slack (a) Slope and elevation were classified and weighted to reflect a hypothetical journey, where the incline of the slope was the most important variable to the traveller (70%) and elevation was a minor concern. (b) Based on those variables, a least cost path was modelled. Data after Stoertz (1997) and Mortimer (1905). Contains Ordnance Survey data © Crown copyright.

4.3 Biographies of lines: functions, meanings and histories

In summary, the different broad and narrow classifications which appear to characterise the linear earthworks around Wetwang-Garton Slack and Huggate Dykes reflect the life histories of individual earthworks, although the classifications themselves are problematic. The fact that very few earthwork segments were monumentalised with six or more banks and ditches suggests that those segments which were became, throughout their life histories, increasingly special places. Indeed, the locations chosen for these super-complex earthworks may have already had lengthy histories stretching back through the Early Bronze Age and Neolithic. It is necessary to consider the nested biographies of individual earthwork segments, and to understand them in relation to not only the lines of which they are a part—be those lines 'main' or 'secondary'—but also the topography in which their sit and the earlier monuments which surround them.

The differences in the life histories of Huggate Dykes and Wetwang-Garton Slack may stem from the presence of particular earlier monuments at those two sites, which could have wielded agency in the Late Bronze Age and Iron Age through mythological histories. The meanings of these already-ancient places could have been renegotiated and incorporated into the life histories of particular earthworks, becoming as important as contemporary land use. The next chapter explores the story of Wetwang-Garton Slack, considering how the earthwork at the heart of the site's settlement-cemetery complex related to the biographies of the people who lived and died there.

Chapter 5.
Living with lines: Wetwang-Garton Slack

> *Whatever was the purpose of their construction, it is clear that they were the works of a settled community, who spared no amount of labour to enclose their pasture—and probably, to some extent, tillage—lands, and to protect their homes and their herds by the most substantial boundaries and ways of communication then known.*
>
> *Mortimer 1905: 378, on the creation of linear earthworks*

The people of Wetwang-Garton Slack lived and died alongside linear earthworks. They organised their world with these monumental land divisions, drawing on natural topography and older features in the landscape to define their homes—and themselves. This chapter reanalyses the archival material produced by the excavations that took place across the valley over the course of two decades, and attempts to write a biography of the site's linear earthworks.

5.1 Site location and excavation history

The 8km-long earthwork at Wetwang-Garton Slack is located in a dry valley (slack) at the eastern edge of the Yorkshire Wolds, spanning the parishes of Wetwang and Garton (Fig 5.1). Excavated from the 1960s to 1980s by TCM Brewster and then by John Dent, the valley is well-known for its extensive (2km long, 40ha), multi-phased Iron Age settlement and square barrow cemetery. These were laid out alongside the linear earthwork and were situated amongst the remains of older Neolithic and Early Bronze Age funerary monuments. In addition to reports by Brewster (1971 and 1980) and Dent (1982, 1983, 1984, 1985 and 2010), archival material from the Wetwang/Garton Slack Project at the University of Bradford sheds light on the life of the linear earthwork at the heart of the settlement-cemetery complex.

The present-day village of Wetwang lies 1km to the south-west of the excavated later prehistoric settlement. The place-name Wetwang is believed to mean ‘Field for the trial of a legal action’, from the Old Norse *vae’tt-vangr* (Institute for Name-Studies 2015c), and Garton to mean ‘Farm/settlement on/near a triangular piece of land’, from the Old English *gāra* and *tūn* (Institute for Name-Studies 2015a). The parish boundary which separates these two villages runs roughly N-S through the slack and the excavation area.

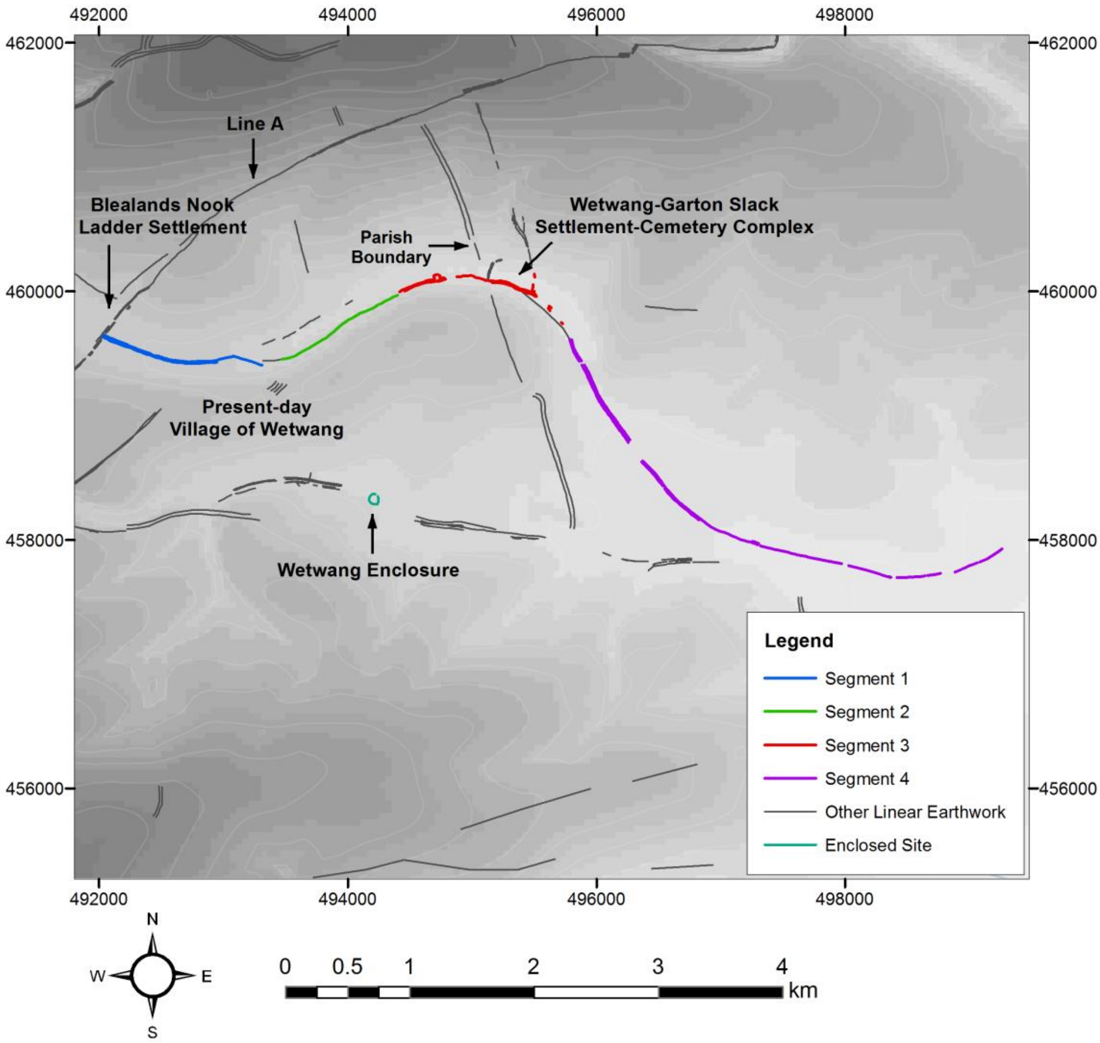


Fig 5.1 Location of Wetwang-Garton Slack linear earthwork and other sites mentioned in Chapter 5
Earthwork data after Stoertz (1997), Mortimer (1905) and archival materials from the Wetwang/Garton Slack Project. Contains Ordnance Survey data © Crown copyright.

The linear earthworks of Wetwang-Garton Slack were first formally investigated by John Robert Mortimer (1882, 1905), who recorded them alongside his excavations of the earlier prehistoric barrows of the valley. The now-disused Malton and Driffield Railway follows almost the same path as the main earthwork at the heart of Wetwang-Garton Slack, and yet its significance does not seem to have been recognised during the railway's construction in the mid-nineteenth century. The earthwork is absent from the contemporary and later Ordnance Survey maps (e.g. 1855 1st Edition Six Inch to a Mile: Sheet 161; 1911 1st Edition Revised Six Inch to a Mile: Sheet 161NW; 1929 Revised Six Inch to a Mile: Sheet 161NW; see also Mortimer 1905: 211), which do mention the discovery of prehistoric weapons and burials, but which do not show the line of the earthwork. The first time that the extent of the settlement and cemetery was recognised was when the slack was excavated in the 20th century ahead of quarrying, and it was then that Mortimer's earthwork came to be investigated.

The Wetwang-Garton Slack excavations began in 1963 by C and E Grantham as a rescue mission to save burials at risk of being quarried away, and were formalised in 1965 by the involvement of the East Riding Archaeological Research Committee (ERARC). Led by TCM Brewster, the ERARC excavation lasted from May 1965 to March 1975 and covered sites Garton Slack (GS) 1-32 and Wetwang Slack (WS) 1-5, working from east to west ahead of the quarry (Figs 5.2, 5.3). The results of these investigations were written up as a 400,000-word microfiche report (Brewster 1980; see Brewster 1980 [2010] for digitised, edited version). After a decade of excavation the ERARC withdrew its funding, and in 1975, John Dent of the Humberside Archaeological Committee took over the project (Brewster 1980 [2010]: 6). Dent continued moving westwards through the Wetwang side of the valley, uncovering an extensive square barrow cemetery (1975-1980) and three chariot burials (1984). Throughout these extensive excavations, the linear earthworks within and around the valley bottom were recognised as being key to the organisation of the settlement-cemetery complex.

Fig 5.2 Wetwang-Garton Slack from the SE in 1971, with quarry moving westwards
(Source: Brewster 1980: Pl 1. Courtesy of Wetwang/Garton Slack Project archive.)

Fig 5.3 Precarious nature of the excavations, GS27
(Source: Brewster 1980: Pl 99. Courtesy of Wetwang/Garton Slack Project archive.)

5.2 The Wetwang-Garton Slack earthworks

The valley of Wetwang-Garton Slack is located along Line A (see Chapter 4), and in this topographic hollow, a linear earthwork snakes its way down the edge of the Wolds towards Driffield and the plain of Holderness to the south-east. This earthwork can be divided into four segments (Fig 5.1);

Segment 3 comprises the bank and ditches excavated by Brewster and Dent (Fig 5.4-5.6), and therefore provides the best evidence for the monument's morphology and phasing. Perpendicular to the main alignment of Segment 3 are several shorter boundaries, including the Double-ditch System in GS14 and GS16-17. These are discussed in conjunction with the main earthwork ditches in the site biography (Section 5.3).

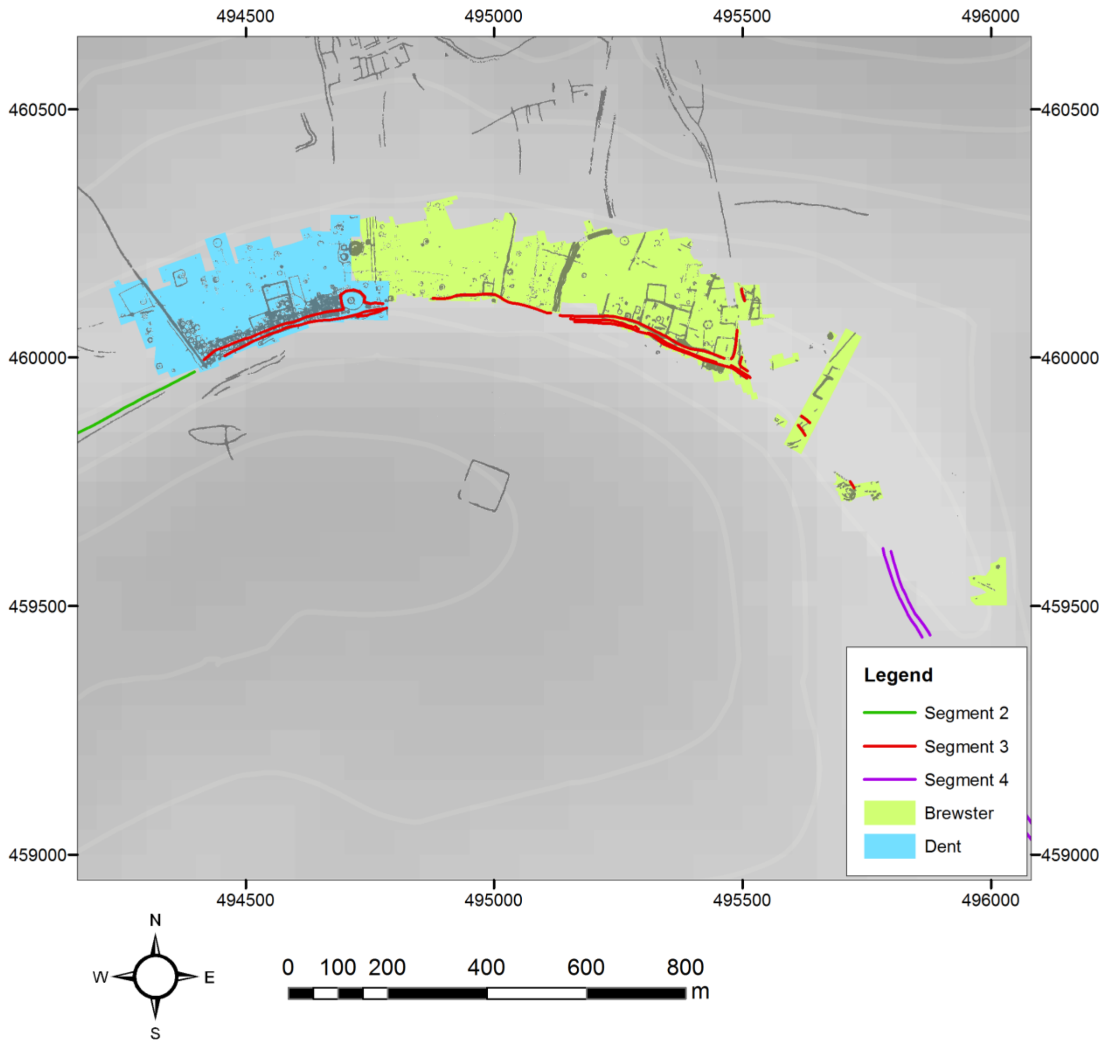


Fig 5.4 Areas excavated by Brewster and Dent along Segment 3
Contains data after Stoertz (1997), Mortimer (1905) and archival materials from the Wetwang/Garton Slack Project. Contains Ordnance Survey data © Crown copyright.

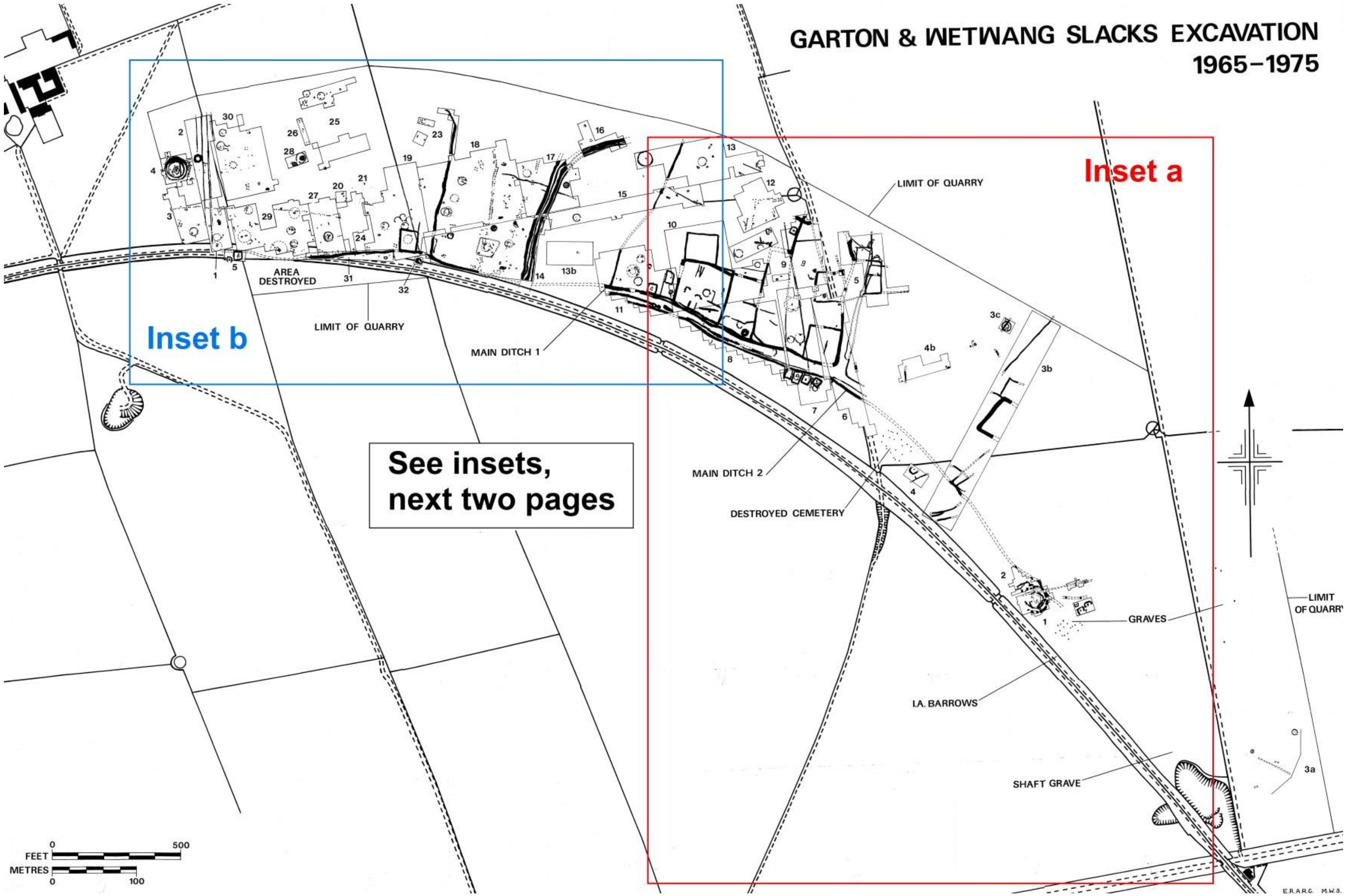
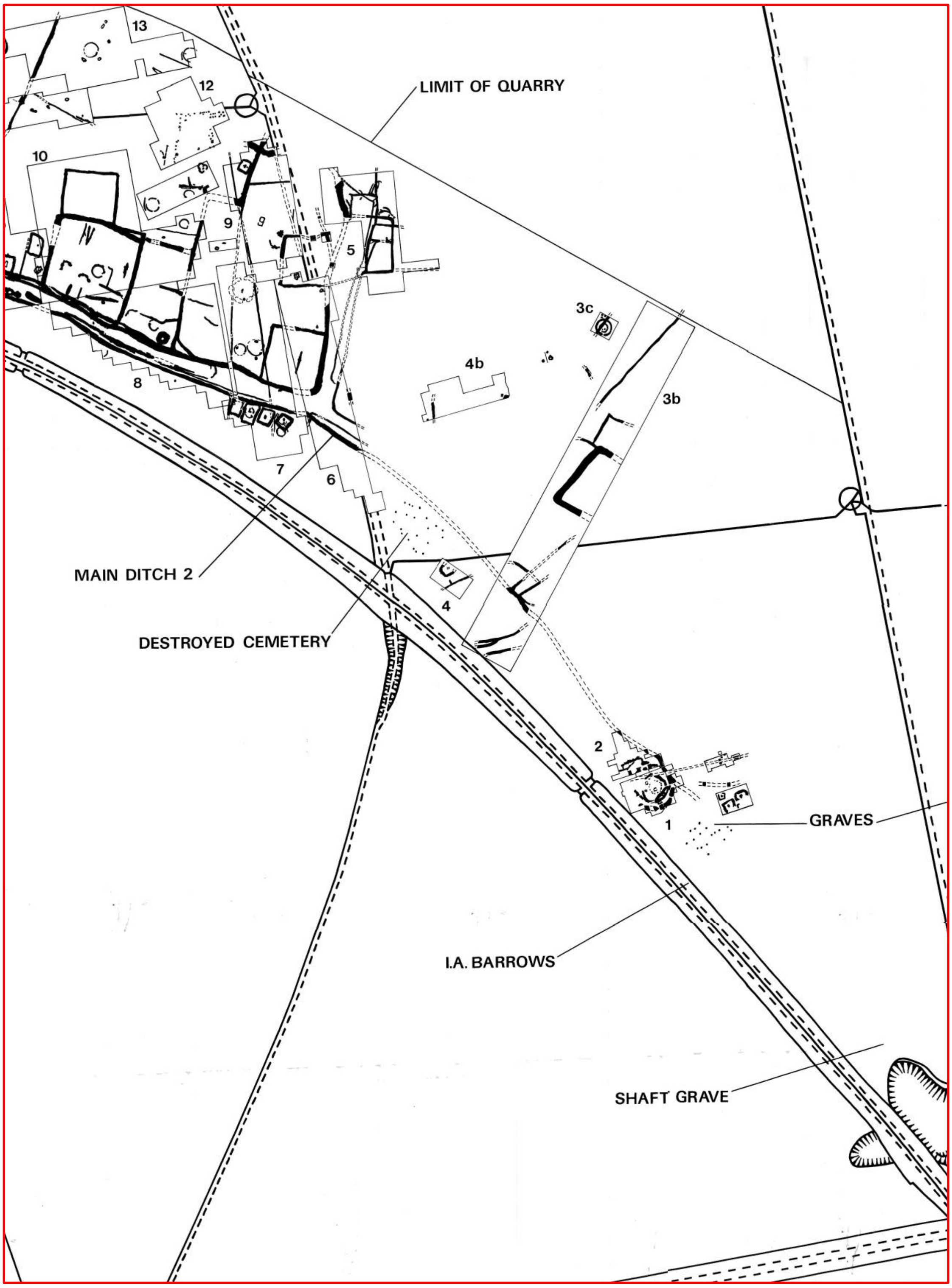


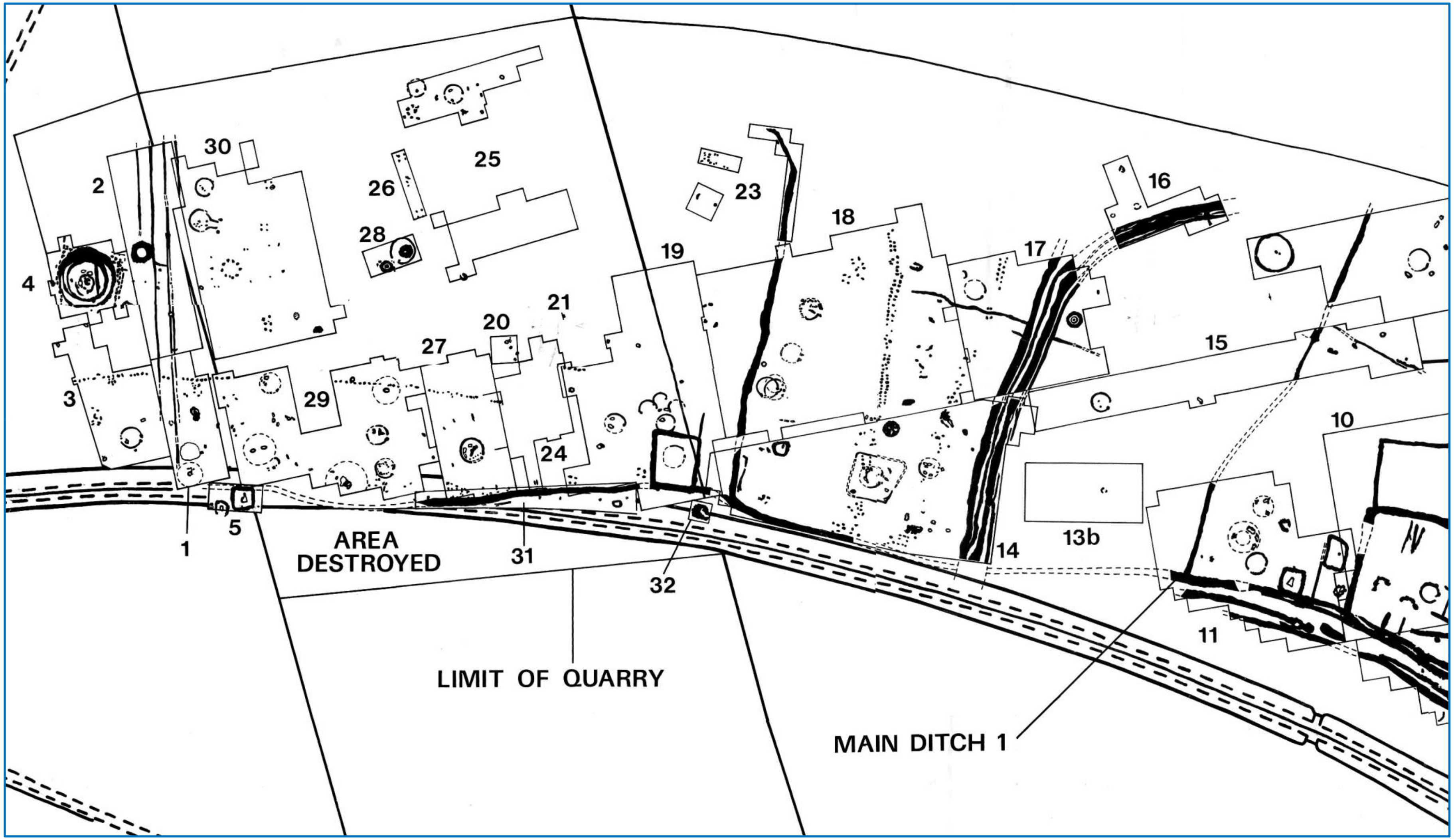
Fig 5.5 Site numbers assigned by Brewster (GS1-32 and WS1-5)
After Brewster 1980: Fig 3. Archival copy courtesy of the Wetwang/Garton Slack Project archive.

a



13
12
10
9
5
3c
4b
3b
8
7
6
4
2
1
LIMIT OF QUARRY
MAIN DITCH 2
DESTROYED CEMETERY
GRAVES
I.A. BARROWS
SHAFT GRAVE

b



30
2
25
26
28
4
3
29
27
20
21
19
23
18
16
17
15
10
24
1
5
AREA
DESTROYED
31
32
14
13b
11
LIMIT OF QUARRY
MAIN DITCH 1

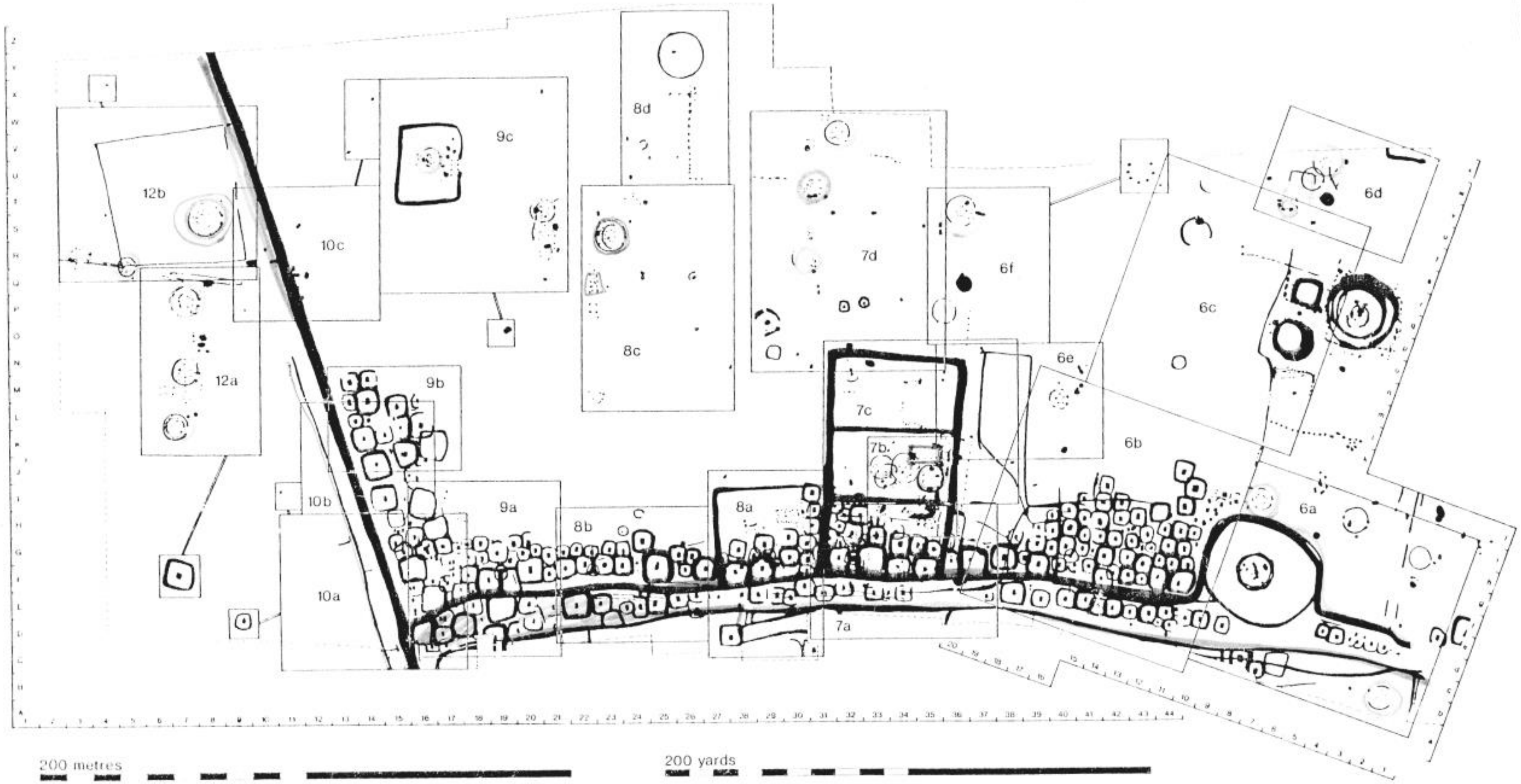


Fig 5.6 Site numbers assigned by Dent (WS6a-12b)
Courtesy of the Wetwang/Garton Slack Project archive.

5.2.1 General morphology

Segment 1 begins by branching off Line A to the southeast, curving down into Wetwang-Garton Slack. At the head of the valley it is complex, with three ditches visible as cropmarks. The northernmost of these ditches disappears after 200m, and the southernmost after 950m. This area of the valley was subject to later modification with ladder settlements, which were constructed along Line A, the Wetwang-Garton earthwork and the Fimber earthwork (on the north-western side of Line A, almost immediately opposite the Wetwang-Garton earthwork). Thus, it is possible that these two shorter ditches may represent—or may have been destroyed by—later phases of boundary construction. The third, central ditch of Segment 1 continues down the valley for a total of 1300m from its origin at Line A. Immediately to the north of the modern village of Wetwang, it curves northwards and then sharply turns to the south, where it begins to closely hug the southern slope of the slack. The ditch ends at Station Road, after which there is a 150m gap before Segment 2. This may be due to the presence of a palaeochannel, which follows the same curve of the valley bottom and which may be obscuring the presence of a smaller, anthropogenic cropmark.

Segment 2 appears to follow same alignment as Segment 1, picking up the line of the central ditch. The Wetwang Village chariot burial (Hill 2002) lies 330m due south and uphill from the western endpoint of Segment 2. About 750m along this segment, the 1984 Wetwang chariot burials (Dent 1985) lie to north. Continuing eastwards for another 330m, the earthwork arrives at the western limit of Dent's 1975-1980 Wetwang Slack excavations. Here, the core of the square barrow cemetery abuts a NW-SE boundary ditch (referred to hereafter as the Wetwang Cemetery Boundary, or WCB) that runs perpendicular to the earthwork. It is not clear whether Segment 2 is Main Ditch 1 or Main Ditch 2 of the Wetwang-Garton Slack excavations, as there is a gap between the excavations and the aerial photographic evidence (Stoertz 1997), and satellite imagery does not provide any clues that might resolve the issue.

Segment 3 comprises the Wetwang-Garton Slack Main Ditches (MD) 1-3. MD1 and MD2 were recognised by Brewster (1980 [2010]), and MD3 has been interpreted from archival plans. These ditches run for approximately 1400m in the excavated area, with gaps and inferred sections (site-by-site descriptions below). At 620m and 730m along this segment, major N-S boundaries run perpendicular to the earthwork. At 1100m along Segment 3, MD1 turns northwards and MD2 carries on along its original alignment. The excavation of GS6 revealed the edge of a ditch (Ditch 4) that, at its northern end, appears to run parallel to the north-turning end of MD1. This ditch then curves south-east to run parallel with MD2, and as it appears similar morphologically to the other main ditches, it has been reinterpreted as MD3. The path of Segment 3 becomes less clear in the eastern portion of the excavated area, until it reaches its endpoint in GS1-2.

After GS1-2, there is a 130m gap before Segment 4 of the earthwork begins. Two ditches are visible as cropmarks that run south for 1800m (Stoertz 1997). The northernmost of the two ditches continues for another 2500m and has series of smaller land divisions arranged at right angles to it. The segment ends 370m to the southwest of Elmswell. In total, the Wetwang-Garton Slack earthwork measures about 8km in length, including gaps between and within the four segments.

5.2.2 Segment 3 evidence: the excavated ditches

Segment 3 forms the southern edge of the Wetwang-Garton settlement-cemetery complex and offers the best evidence for the construction, use and modification of the linear earthwork as a whole. At the time of Brewster's excavations, the earthwork's banks did not survive above the modern ground level. Thus, the monument is primarily represented by its ditches, the morphologies and fills of which reveal a complex life history. Brewster (1980 [2010]: 36-41) identified two parallel earthwork ditches, which he designated Main Ditch 1 (MD1) and Main Ditch 2 (MD2), as well as several minor ditches running off of the earthwork at right angles. These main ditches correspond to Dent's Ditch A and Ditch B, respectively (see Section 5.3.1.18). At the western side of GS6, MD1 itself turns northwards at a right angle from its original alignment, while MD2 carries on along its original alignment. A short segment of ditch caught by the eastern edge of the GS6 excavation appears to mirror MD1, and has thus been re-interpreted as MD3 (Fig 5.7). The main ditches vary slightly in width and depth across the site, but they are typically 2-3m wide and 1m deep (Fig 5.8; see detailed descriptions below, Section 5.3.1). They are widely spaced, with a 10-15m gap between them, which is herein referred to as the Central Berm and which must be distinguished from the banks that could have created from the ditches' upcast chalk rubble (Section 5.2.2.4).

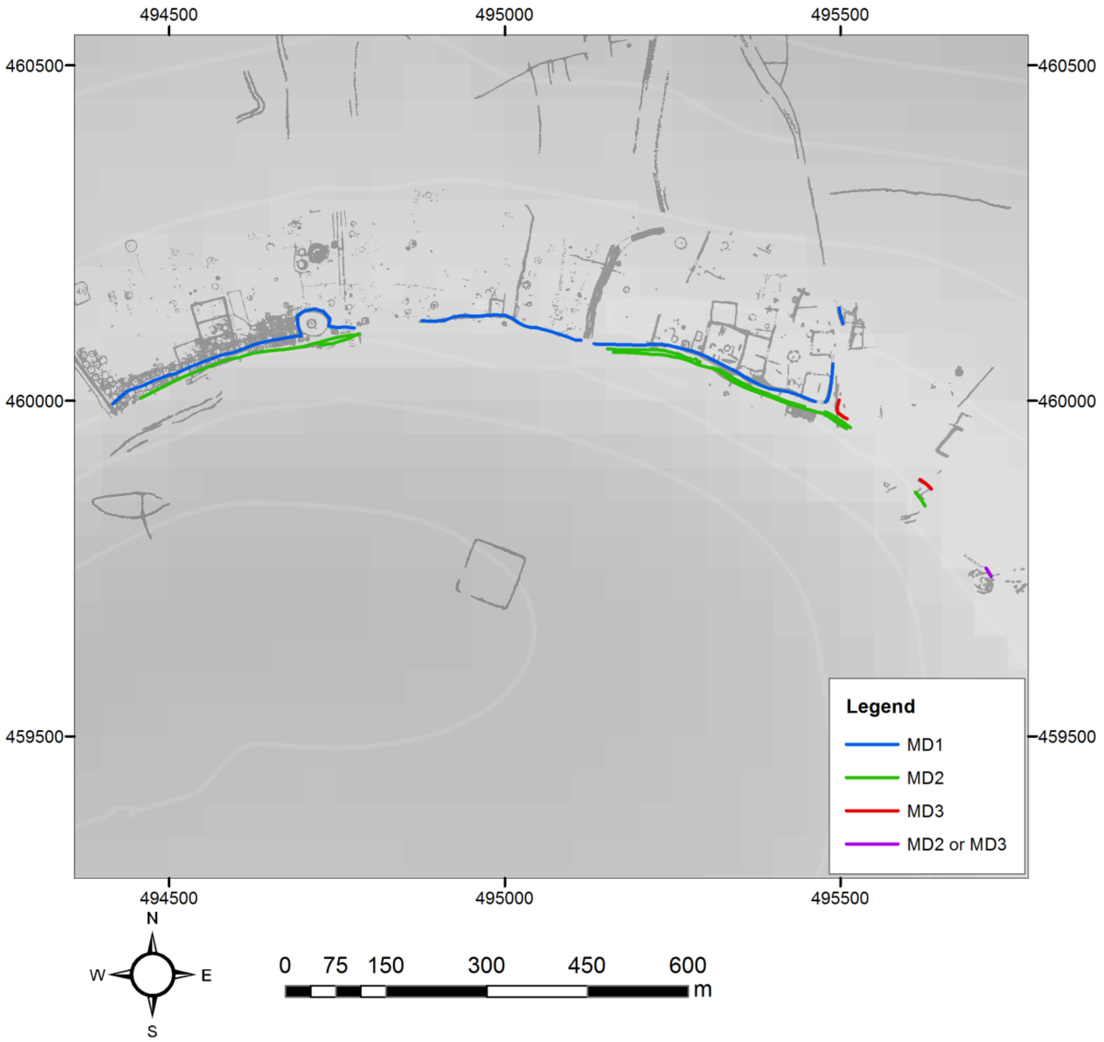


Fig 5.7 Main Ditches 1-3
Earthwork data after Stoertz (1997), Mortimer (1905) and archival materials from the Wetwang/Garton Slack Project. Plan: Dent, courtesy of the Wetwang/Garton Slack Project archive. Contains Ordnance Survey data © Crown copyright.

All three main ditches show evidence of re-cutting and re-modelling; some sections have clearly been re-dug, and smaller slots have been dug adjacent to the original wide ditches. Chadwick (2013: 18) argues that ditch re-cuts represent special events such as changes in land tenure, rather than routine maintenance, as the latter is generally archaeologically invisible. Boundary cutting and re-cutting are social acts. They draw upon and reflect interpersonal ties, such as kinship and genealogy, which may also manifest themselves in houses and other settlement features (e.g. Thomas 1997; Sharples 2010; Giles 2012; Gosden 2013; see also Section 7.1). Therefore, the re-cutting of the main ditches at Wetwang-Garton Slack most likely highlights particularly important moments in the earthwork's life history, and embodies social relationships amongst the inhabitants of the settlement, both living and dead (see below and Sections 5.3.1.18 and 5.3.1.19).

a

b

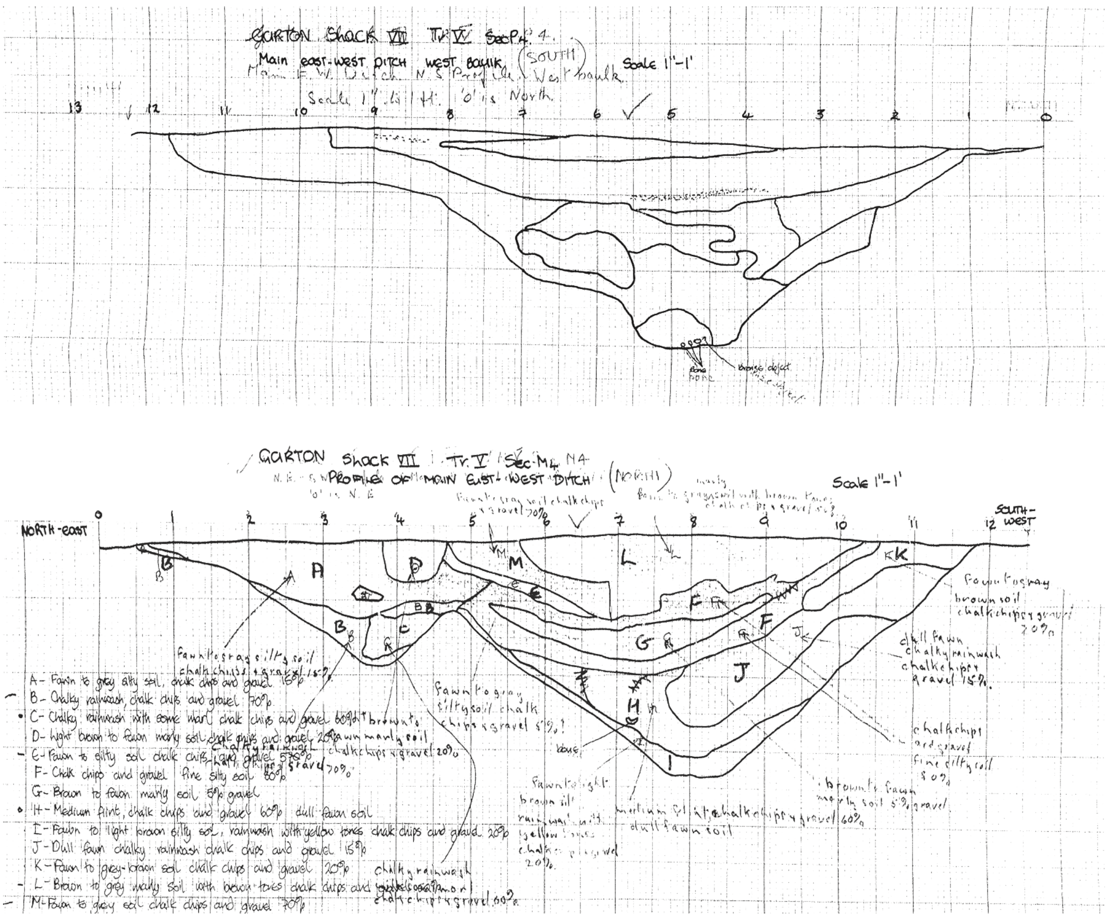


Fig 5.8 Typical ditch sections from Brewster's archive
The Wetwang/Garton Slack Project is currently illustrating archival materials, such as section drawings, in preparation for publication. Working with section drawings in their original state was useful for this PhD project, as Brewster's microfiche report contains errors and omissions (see Section 5.3.1.5), and it was useful to return to the primary sources of information available for the earthwork ditches. Courtesy of the Wetwang/Garton Slack Project archive.

Perhaps the most striking episode of ditch (re-)cutting occurs in the Wetwang cemetery. The latest phases of the earthwork, Ditches A and B, correspond to MD1 and MD2 as excavated by Brewster. They measure approximately 2-3m wide and are spaced with a 10-15m gap between them (the Central Berm). The earliest phases of the earthwork ditches, according to Dent (Fig 5.9; Dent nd; Giles 2000: 128, Fig 5.20-21), are found in in WS6a-b and 8a-b: Ditches D and E lie immediately to the south of Ditch B=MD2 in WS6a and WS8a; and Ditch F lies immediately to the north of Ditch A=MD1 in WS8b and on same alignment as Ditch A=MD1 in WS6b. In WS6b, Ditch F abuts but does not encircle an Early Bronze Age round barrow, while its later phase (Ditch A) encircles the barrow on its northern side (Figs 5.9 and 5.10). Dent was able to ascertain the phasing of Ditches A, B, D, E and F based on their stratigraphic relationship with the square barrows around them. The earliest square barrows (Middle Iron Age, although they are marked as Early Iron Age on Dent's phasing in Fig 5.9) respect the overall alignment of the earthwork, and seem to be bounded by Ditches E/F=MD2. Giles (2000: 128) concurs with Dent's assessment of the cemetery and earthwork phasing, placing Ditches A=MD1 and B=MD2 in the Middle Iron Age. She argues that the bisection the cemetery achieved through the cutting of Ditch A would have created 'a 'new' and 'old' section of the cemetery [that] would have been readable as a 'history' of burial', and that this was done carefully so as not to disturb the central burials in the square barrows that lay in the path of the new boundary (Giles 2000: 128). These changing routes and boundaries reflect changing needs and priorities within the community living in Wetwang-Garton Slack. As access along a flat, bounded trackway became more vital in the later part of the Middle Iron Age, the earliest square barrows that impeded the flow of people, animals and vehicles down the slack might seem to have been sacrificed, in what could be considered the Iron Age equivalent to a road scheme. The monuments to either side of the newly re-established trackway were salvaged, but those in its path were flattened. However, the remodelling of the earthwork at the expense of the square barrows between the main ditches does not necessarily mean that those barrows were seen as less meaningful than those which were deliberately preserved. Instead of seeing the flattened square barrows as being cut off from the rest of the cemetery, perhaps it is more appropriate to think of them and the Early Bronze Age round barrow in WS6a-b as being *incorporated into* the road. These square barrows may have been given a new status by being absorbed into an older monument—especially if the road was used for processions or special journeys (see Sections 5.3.1.18 and 5.3.1.19; see also Section 6.4 and Chapter 7 for discussions about journeys along linear earthworks).

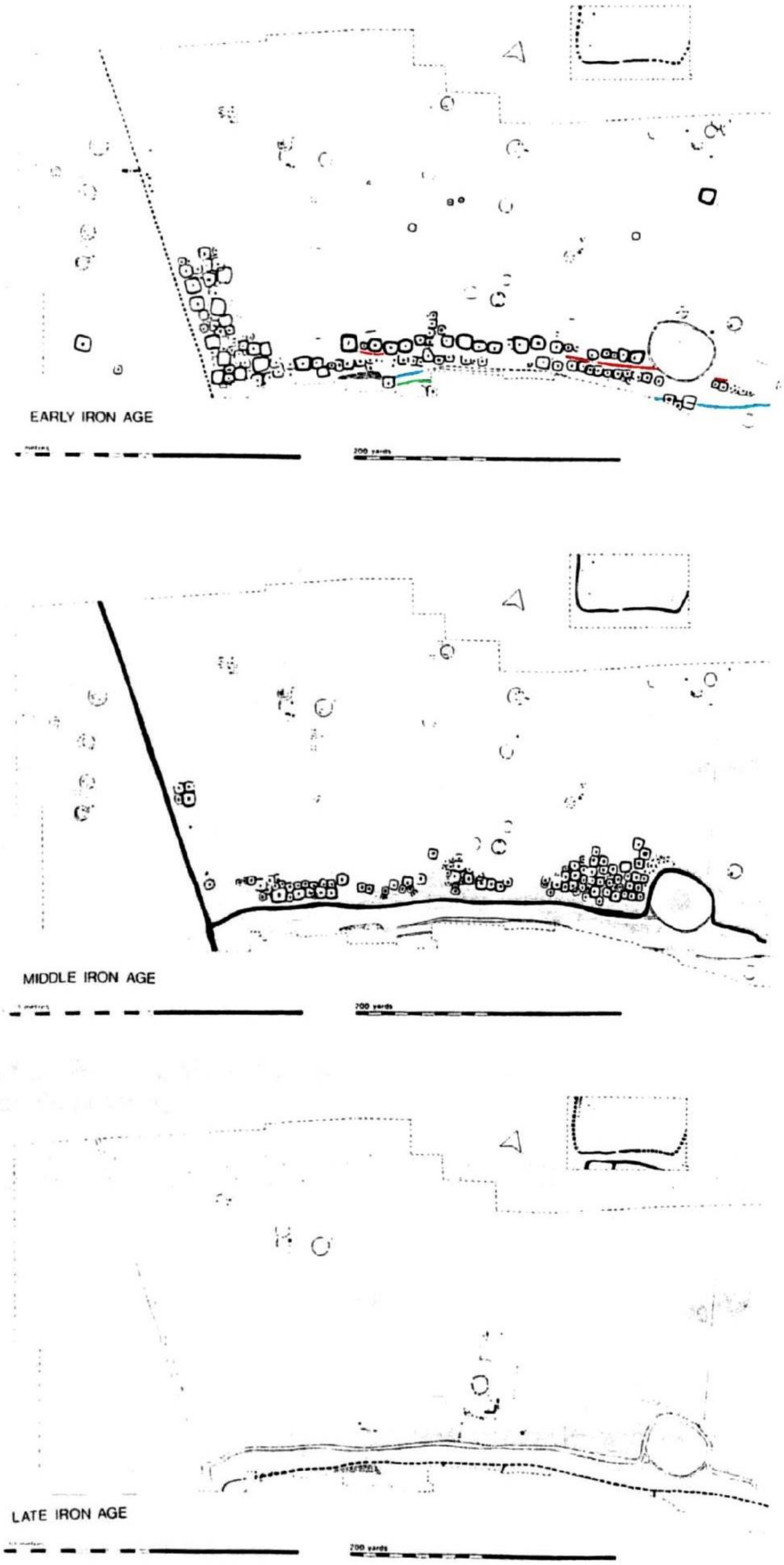


Fig 5.9 Dent's unpublished phasing of the Wetwang cemetery ditches, broken down into three stages Ditch F, the earliest phase of MD1, is marked in red. Ditches D (green) and E (blue) form the same alignment as MD2. Although Dent has phased the earliest square barrows as belonging to the Early Iron Age (see discussion of site/landscape phasing in Dent nd: vol 2, 49-56), subsequent work by Jay et al. (2012) has shown that the cemetery dates to a narrow time period in the Middle Iron Age. Compare with Fig 5.15. (Source: Giles 2000: Fig 5.20, after Dent nd)

5.2.2.1 Main Ditch 1

Sites: GS5-8, 11, 14, 19, 31; WS6a-b, 7a, 8a-b, 9a, 10a

MD1 (Brewster 1980 [2010]: 36-37) descends from the northern slope of the valley into GS5 on a N-S orientation, before turning to the west in the valley bottom (GS6). There it forms the northern side of the settlement-cemetery complex's main, E-W earthwork alignment. Along the entire length of MD1, re-cuts and later modification were present. The N-S portion of MD1 (GS5) forms an axis along which later rectilinear enclosures were constructed, and the ditch sections showed clear evidence of re-cutting. In GS8 and GS11, MD1 splits into two closely-spaced parallel ditches for approximately 100m, which is suggestive of multiple phases of ditch construction. In GS11, the barrow ditch of a chariot burial cuts into the uppermost fills of MD1, providing a relative chronology for the cutting and infilling of the earthwork ditch (see Section 5.3). The chariot-type barrow in WS5 (the so-called 'Sinful Couple'; Brewster 1980 [2010]: 510-515) cuts the upper fills of a ditch that Brewster (1980 [2010]: 510-511, Fig. 498) interpreted to be MD1, but this ditch does not align with MD1 in either GS31 or WS6a. Therefore, this segment is discounted as being MD1; it discussed below in Section 5.3. The earliest square barrows in Dent's Wetwang cemetery occur to both the north and south of Ditch F=MD1 and encroach upon the Central Berm—effectively blocking access along this routeway—but respect Ditches D/E=MD2 as a southern boundary (Fig 5.9). As the Wetwang cemetery expanded and access along the Central Berm became more important, MD1 was re-cut (=Ditch A) to encircle the Bronze Age round barrow near the eastern end of the cemetery in WS6a-b (Fig 5.10; Dent nd: vol 2, 26).

Fig 5.10 MD1 and MD2 forming the southern boundary of the Wetwang cemetery
Archival plan by Dent. Courtesy of the Wetwang/Garton Slack Project archive.

5.2.2.2 Main Ditch 2

Sites: ?GS1-2, 3b, 6-8, 11; WS6a-b, 7a, 8a-b, 9a, 10a

MD2 (Brewster 1980 [2010]: 38-39) may be present as far east as GS1-2, and is almost certainly present in GS3b, but it is not immediately recognisable as one of the major boundary ditches of the settlement-cemetery complex until it enters the south-western corner of GS6. MD2 runs parallel to and to the south of MD1, and it too is cut by square barrows (GS7). From GS6 westwards to GS11, MD2 has multiple ditch phases or components. Its larger ditch is accompanied by a narrow trench or palisade slot in GS6-7, and closely-spaced parallel ditches in GS8 and GS11 (comparable to MD1's parallel ditches in the same sites). MD2 disappears until WS6a, where it emerges as Ditches D/E (earliest phase) and Ditch B (later phase); here, it continues to follow the same general alignment as MD1=Ditch A. In the Wetwang cemetery, the majority of the square barrows appear to respect MD2=Ditches D/E/B as a boundary feature. However, this picture may be skewed by the fact that the area to the south of MD2 was not excavated. Indeed, the Wetwang Village Chariot (Hill 2002) lies to the south of the earthwork and the main cemetery, which might suggest that MD1 and MD2 are more of an axis than a boundary.

Fig 5.11 GS6-7, with MD3 already cut by quarry face
MD3 comprises GS6 Ditch 4 (faint, wider stain along quarry face) and GS6 Ditch 5 (thinner stain parallel to Ditch 4). Archival photo from Brewster. Courtesy of the Wetwang/Garton Slack Project archive.

5.2.2.3 Main Ditch 3

Sites: ?GS1-2, 3b, 5-6

MD3 is proposed as a continuation of the E-W alignment of MD1, to the east of GS5-6 (where MD1 turns to the north; Fig 5.11). This feature comprises the Iron Age Ditches 4 and 5 in the south-east corner of GS6—Ditch 5 continues north into GS5 and is phased as L-RIA by Dent (1983: Fig. 3)—and probably Ditch 7 in GS3b. Cropmarks show that the earthwork continues as two lines (MD2 and another) beyond the excavated area, so the absence of a second earthwork ditch beyond GS5-6 seems unlikely. It appears to continue in GS3b, and it is plausible that the short stretch of Iron Age ditch located along the eastern side of the long barrow (Mortimer 37) in GS1-2 could be MD3, rather than MD2 as identified by Brewster (1980 [2010]: 38). This hypothesis is supported by fact that Mortimer (1905) observed a linear earthwork to the west of barrow, rather than to the east. Brewster (1980 [2010]: 38) discounts this inconsistency as the result of confusion over a scrape-hollow channel to the west of the barrow, but it is virtually impossible to plot the exact path of either MD2 or MD3 as far as GS1-2 in order to resolve the issue. If the ditch to the east of the long barrow were MD3 and thus MD2 were located to the west, that arrangement might suggest that the earthwork had been built or modified to encircle or embellish the barrow. A parallel for barrow encirclement can be found in WS6a-b, where MD1 was re-cut to encircle, rather than stop on either side of, a Bronze Age round barrow.

5.2.2.4 Central Berm

Whereas most linear earthworks on the Yorkshire Wolds are constructed with closely-spaced banks and ditches, the Segment 3 earthwork ditches at Wetwang-Garton Slack appear more like a trackway or droveway, with a substantial gap between MD1 and MD2, and between MD1 and MD3. Fig 5.11 illustrates just how wide that gap is. It is certainly too large to have been a single bank; such a construction would have required more chalk than would have been excavated from the ditches alone, and there is no indication that additional chalk had been imported from elsewhere. It is more likely that the ditches, and any banks which might have been created from the upcast, were initially built to flank a flat ground surface at least 10m wide (Fig 5.12). This might have appeared like a berm or platform between the bank-ditch pairs, similar to the berm that Mortimer (1905: 372) observes in the morphology of the earthworks surrounding the village of Fimber. Thus, this flat surface is referred to as the Central Berm throughout this chapter. Whether the Segment 3 banks were built to one side of the ditches (i.e. always on the north side, with the sequence *bank-ditch-berm-bank-ditch*, or always on the south side, with the sequence *ditch-bank-berm-ditch-bank*) or on opposite sides (i.e. between the ditches and the Central Berm, with the sequence *ditch-bank-berm-bank-ditch*, or outside of the ditches, with the sequence *bank-ditch-berm-ditch-bank*) remains undetermined. The former would have looked like a berm in the military sense of the word, with the flat platform allowing access between the slopes of a ditch and a bank, whereas the latter (especially the sequence *bank-ditch-berm-ditch-bank*) would seem more practical for a trackway or road, with ditches allowing rainwater to drain away from the surface. Giles (2000: 128) cites Dent when she suggests that the later phase of MD1=Ditch A might have had a bank on its northern side in the Wetwang cemetery, but this is difficult to prove. Any banks that might have been built on the outsides of the ditches (i.e. not on the Central Berm) were certainly destroyed by the time that the square barrows in GS7 and the chariot burial in GS11 were constructed, as these cut into MD1 and MD2. Alternatively, no banks may have ever existed if the upcast from the ditches has been used as metalling for the Central Berm. Dent discovered gravel and flint metalling in Wetwang Slack (see Section 5.3.1, below), and there is no reason why chalk could not also have been used to create a smooth surface at some point in the monument's life history. Chalk roads are recorded in the post-medieval period on the Wolds (Leatham 1794: 15-16; Mortimer 1978: 7), and although they would have required regular maintenance, the ubiquity of chalk across the region would have made it an attractive building material. Leatham writes the following about the chalk roads of the East Riding:

> 'It is a prevailing method to form the road, by casting the earth from sides into the centre; this forms a loose, damp bed of earth on which the stone immediately lies, and which constantly keeps it in a damp and loose state; and to stones of this nature, moisture must be ruinous. This method is not proper even for stone of the hardest quality, for a bed so damp and open, must occasion a superfluous use of them. A considerable sum would be saved, and a more convenient and durable road formed, by casting off the earth already on the road…'
>
> (Leatham 1794: 15)

Leatham's comments reveal that poor drainage will pose a serious threat to the durability of chalk roads—although this did not prevent his contemporaries from constructing them without first stripping the turf and topsoil. He remarks that the unenclosed areas of the Wolds are easy for travellers to cross because of the variety of routes which they may take, the landscape being open and traversable at the expense of agricultural productivity and the commercial viability of the land, 'as great waste is often made by such a free range over it' (ibid.). This lament reflects the type of movement which Leatham seems to value: his desire for the people of the East Riding to construct dry, flat roads on which carriages might travel efficiently and with expediency falls under Ingold's category of transport (2007: 77-79; see Section 2.3.1). This desire for destination-focussed efficiency might not have been valued in later prehistory, however. Whilst the earthwork-road at the heart of Wetwang-Garton Slack was used for wheeled vehicles and therefore would need have needed to be relatively level and well-drained, the journey along the way might have been equally important, if not more so. On occasion, the road probably hosted special or memorable journeys, such as processions and the welcoming of strangers into the community, in addition to daily travel through and beyond the settlement and cemetery. Thus, the desire to move more slowly and perceptively, allowing time to reflect on the meshworks (Ingold 2007: 77-81) woven through the landscape, could have been a key part of the Central Berm's design (see Section 6.4 for wider patterns of movement around Huggate Dykes and Wetwang-Garton Slack).

To metal a 14m gap between two earthwork ditches of average size (each measuring 2m wide by 1.5m deep) for the length of 1m, the depth of the chalk that could have been applied to the surface would have been approximately 22cm (Fig 5.12b). This would be more than enough chalk to smooth out the ground surface of the berm, and therefore—if no banks requiring upcast had existed—some of the chalk may have been taken elsewhere on the site for other construction projects, or for the making of chalk artefacts. There is no conclusive evidence that can confirm the way (or ways) in which the chalk from the Segment 3 ditches was used, nor how that chalk would have shaped the morphology of the Central Berm. Regardless of the presence or absence of banks, however, the Central Berm would have been flat from its initial construction to the end of its life.

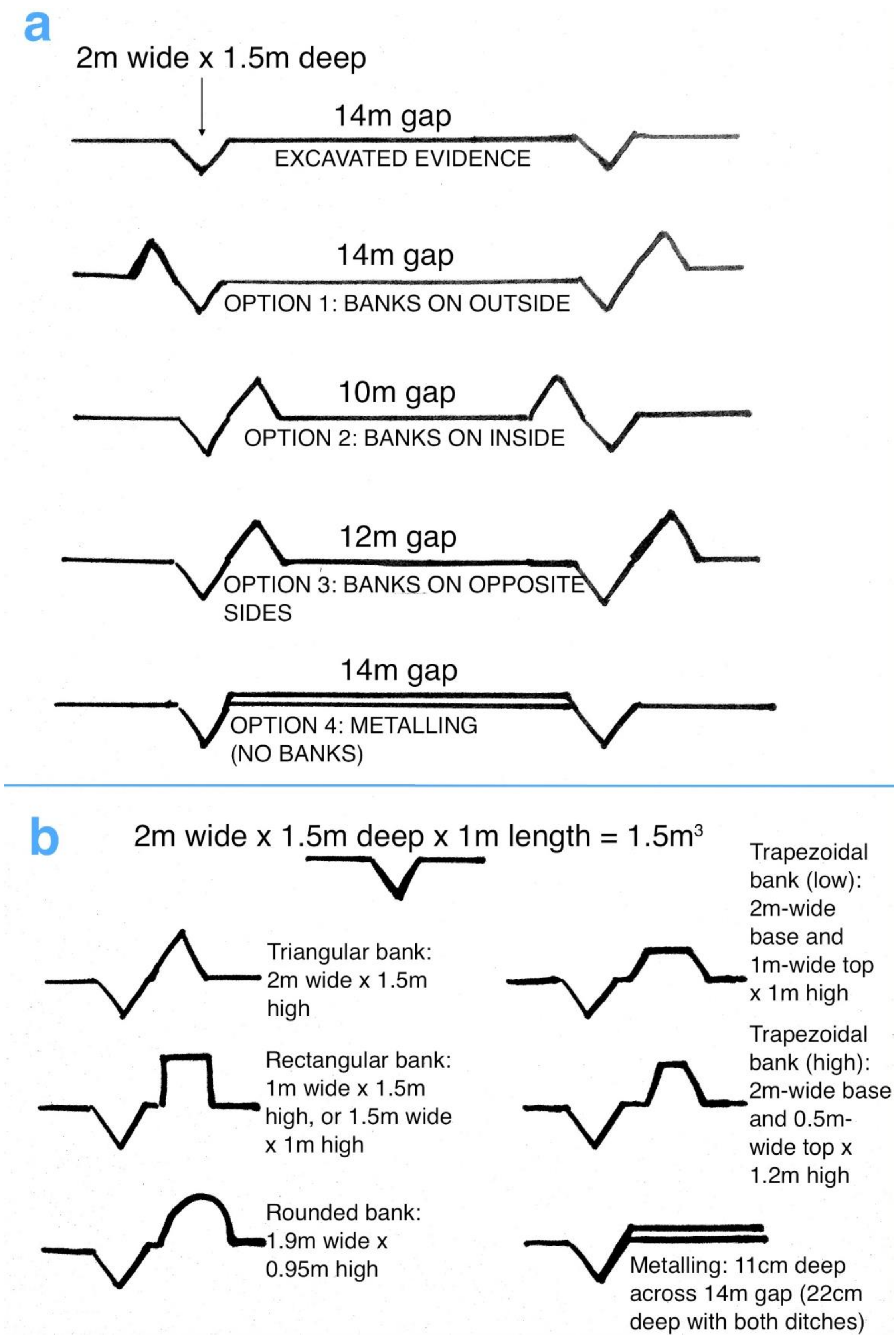


Fig 5.12 Central Berm and options for banks

The width of the Central Berm is dependent on the presence or absence of banks, as well as the placement (a) and shape (b) of those banks. The excavated evidence for the earthwork at the heart of Wetwang-Garton Slack does not offer a clear picture as to where the banks might have been located, if they had existed, so four options have been proposed. Options 1 and 4 would best facilitate movement along the Central Berm, as they would provide better drainage from rainwater than Options 2 and 3. Bank shape would affect the visual impact of the earthwork. (Source: author)

Also unclear is the relationship of the Central Berm in Segment 3 to the other potential ditches, banks and berms of Segments 1-2 and 4; the spacing of the earthwork ditches is consistently far apart, which suggests that the morphology of the Central Berm continues along the valley in both directions. The Central Berm would have been wide and flat enough to provide access down the valley on foot, on horseback and on wheeled vehicles. Thus, it seems likely that ease of movement was intentional when the earthwork was initially designed. Whilst it is possible that the berm could be the result of multiple phases of bank and ditch construction—with MD1 being earlier, for example, and MD2 being a later addition after the settlement and cemetery required an access route instead of a boundary—there is nothing to suggest that the flat berm *was not* part of the original design. Brewster argues that the main ditches 'are obviously major boundary ditches enclosing considerable areas', and he is adamant that they are 'not trackways' (1980 [2010]: 37). He does suggest that the N-S Multiple-ditch System (MDS; GS14, 16-17) that crosses MD1 was used as a trackway after its ditches had silted up, but states that this function did not extend to any of the other ditches (1980 [2010]: 39-40). The non-trackway hypothesis contradicts Dent's findings in Wetwang Slack, where there is evidence for metalling and wheel ruts in the gap between MD1 and MD2 (see Sections 5.3.1.18-5.3.1.23, below). The berm's function as a trackway does not preclude the ditches and any associated banks serving as boundaries. Rather, it seems likely that the earthwork as a whole served a dual function, both allowing access down the valley and separating the settlement and cemetery to its north from the land to its south. As the needs of the community changed throughout the Iron Age, the importance of access along the path of the earthwork increased.

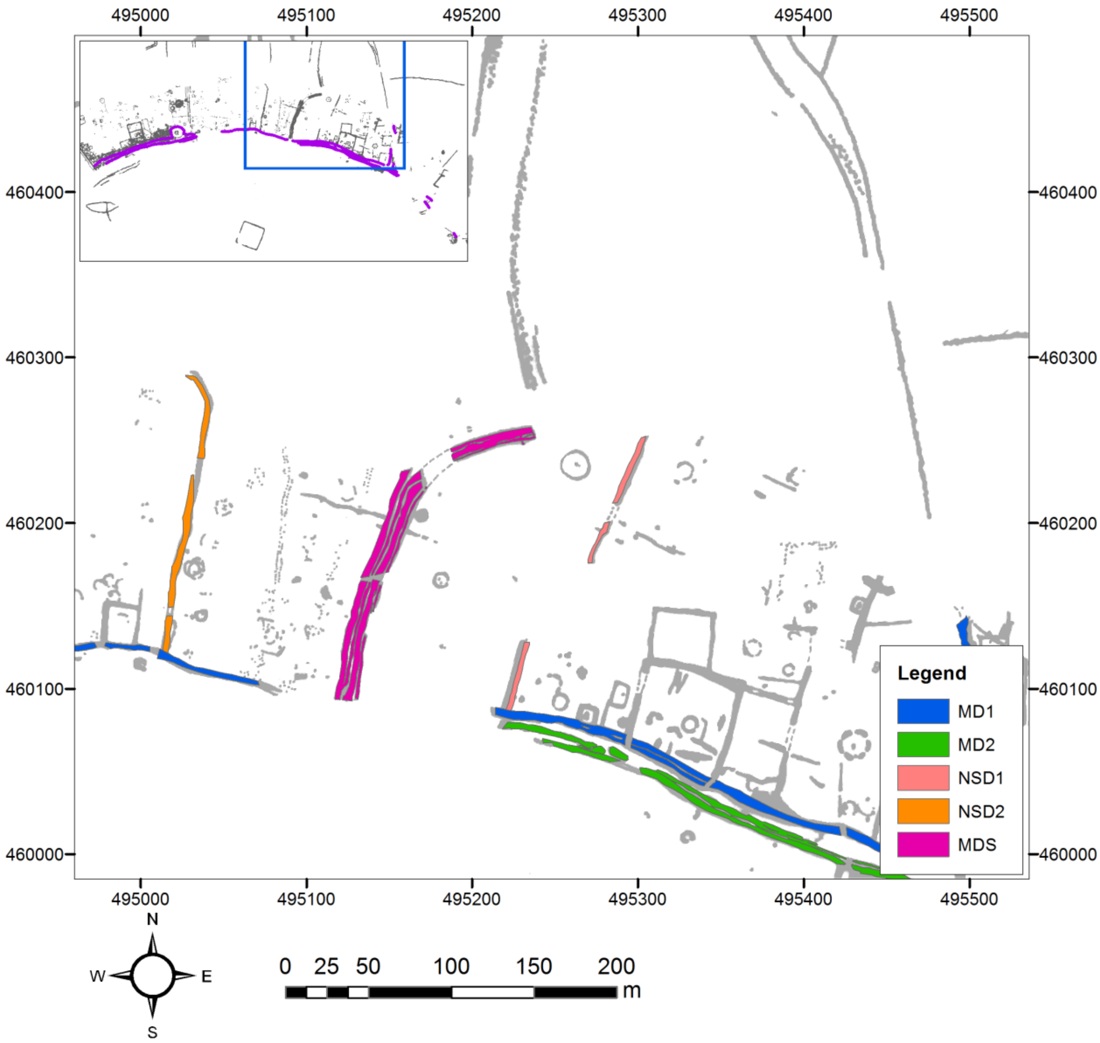


Fig 5.13 Boundaries running perpendicular to the main ditches
Contains archival data. Courtesy of the Wetwang/Garton Slack Project archive.

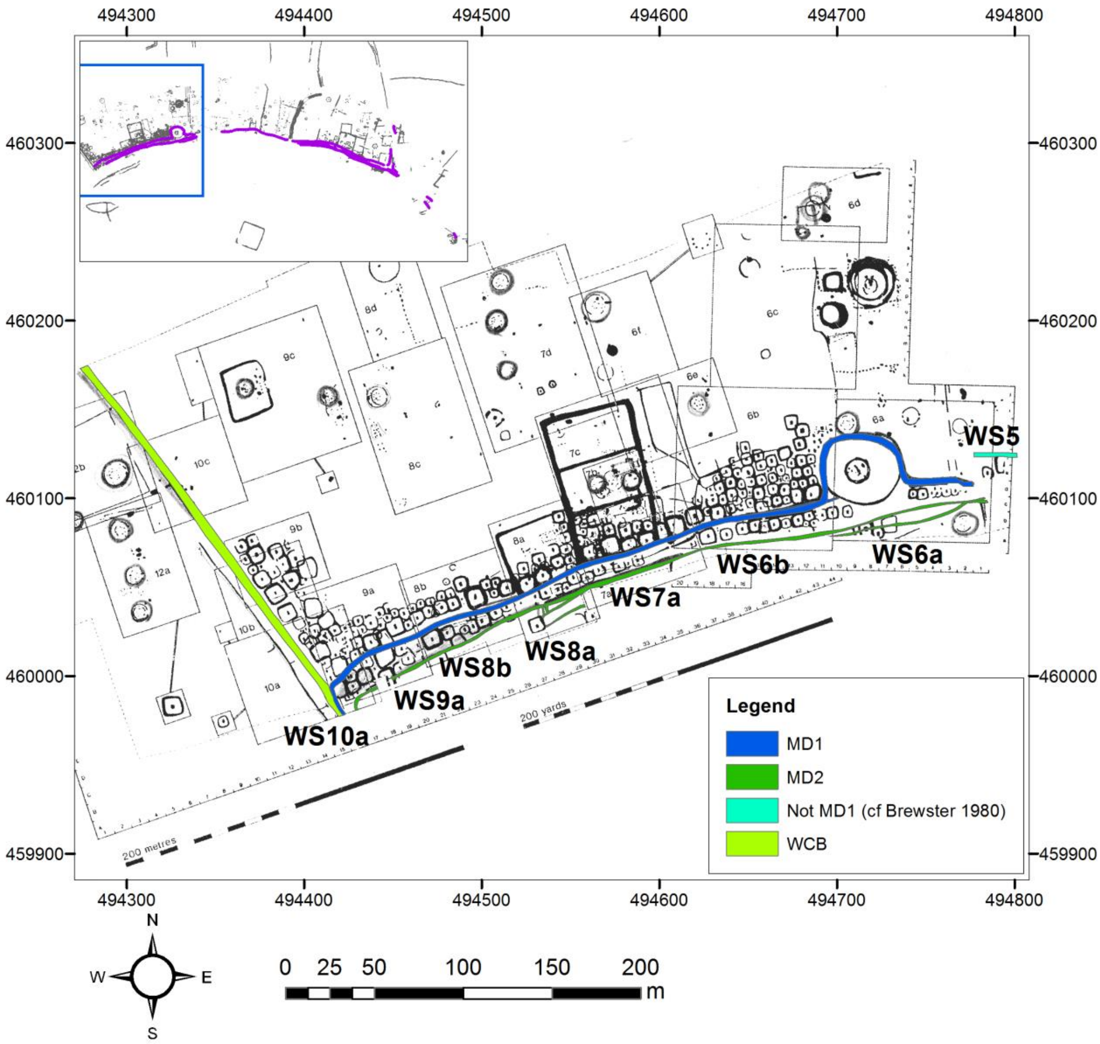


Fig 5.14 Wetwang Cemetery Boundary (WCB), the westernmost perpendicular boundary of the excavated area
Contains archival data. Courtesy of the Wetwang/Garton Slack Project archive.

5.2.2.5 Perpendicular boundaries

In addition to the portions of MD1 and MD3 that turn to the north, there are several phases of ditches that run perpendicular to the main earthwork alignment (Figs 5.13-5.14). These main earthwork ditches (MD1-3), the phasing of which has already been briefly discussed in the context of the Wetwang cemetery, appear to be the earliest phase of land division and reference earlier prehistoric funerary monuments. Although MD1/MD3 and MD2 run alongside each other for the majority of Segment 3, they part briefly in GS6, where MD1 and MD3 turn sharply north. In this area, the main ditches themselves act as a perpendicular boundary-trackway. Either concurrent with or subsequent to the digging of MD1-3, another perpendicular boundary of similar scale was constructed in GS14/16/17. Called the Multiple-ditch System (MDS; also referred to as the Double-ditch system in Brewster 1980, 1980 [2010]), Brewster (1980) and Dent (1983) thought it to be later than MD1, probably dating to the Late or Roman Iron Age. This relationship is far from clear, though, as the intersection of the two features fell outside the excavated area and thus the phasing of the MDS was based on finds, which did not include anything diagnostically Early Iron Age. The next phase of boundary construction across the site is represented by two ditches running roughly north-south, referred to here as North-South Ditch 1 (NSD1) and North-South Ditch 2 (NSD2). NSD1 is found in GS11/15/13, which Brewster considers to be the late medieval in GS11 (1980 [2010]: 293, Fig 238) but Iron Age in GS13 (1980 [2010]: 338, Fig. 278). The stratigraphic relationship between MD1 and NSD1 is such that NSD1 is lower than the deepest (re-)cut of MD1, but it is not apparent which of the two came first (see Section 5.3.1.7, especially Figs 5.34-5.35). NSD2 comprises Brewster's N-S Ditch 3 in GS14/18/23, which is also stratigraphically lower than the deepest (re-)cut of MD1. This is a single ditch that runs up the northern slope of the valley, and it aligns with one of Mortimer's (1905) single entrenchments. The cemetery in Wetwang Slack is bounded on its western side by a ditch, referred to here as the Wetwang Cemetery Boundary (WCB). This boundary meets the western edge of MD1 and appears to channel movement southwards at this intersection (Fig 5.14). The effect of these perpendicular boundaries—the MDS, NSD1, NSD2 and the WCB, along with the N-S portions of MD1 and MD3—would have been to divide the northern part of the valley bottom radially, potentially from the earliest phase of earthwork construction and occupation. Finally, the space along the valley bottom that had been divided up by NSD1, NSD2, the main ditches and the MDS was further subdivided by the construction of ladder settlement enclosures in the Late Iron Age (Fig 5.15). These smaller enclosures re-cut MD1 but continued to respect the Central Berm, leaving it open to allow movement.

As dating evidence for the earliest phases of the main ditches is scarce, if not altogether absent, it is not possible to establish precisely when they were constructed. Rather, a relative chronology based on locational and stratigraphic relationships to earlier and later features of known date—namely, burials—must be employed. Upon completing the Wetwang Slack excavations, Dent was able to propose two major phases of Iron Age settlement/funerary activity (Fig 5.15), with further resolution possible within each of those main phases (Fig 5.9-5.10). His model (nd: vol 2, 49-56; 1983: Fig. 3) places the linear earthwork and smaller N-S boundary ditches in the Early Iron Age, along with the square barrows and the majority of the roundhouses from the valley. He also illustrates how sections of the main ditches were re-cut in the Late/Roman Iron Age, and places the construction of the Double-ditch System in this phase as well (1983: Fig. 3, bottom). Subsequent studies (e.g. Giles 2000, Jay et al. 2012) have shown that the square barrow cemetery belongs to the Middle Iron Age, with the chariot burials being restricted to possibly only a few generations. Therefore, a much more nuanced chronology has been achieved for burials. The next section (Section 5.3) attempts to achieve a similar level of detail regarding the phasing of the main earthwork and its related boundaries, using a biographical approach to tell the life histories of these features.

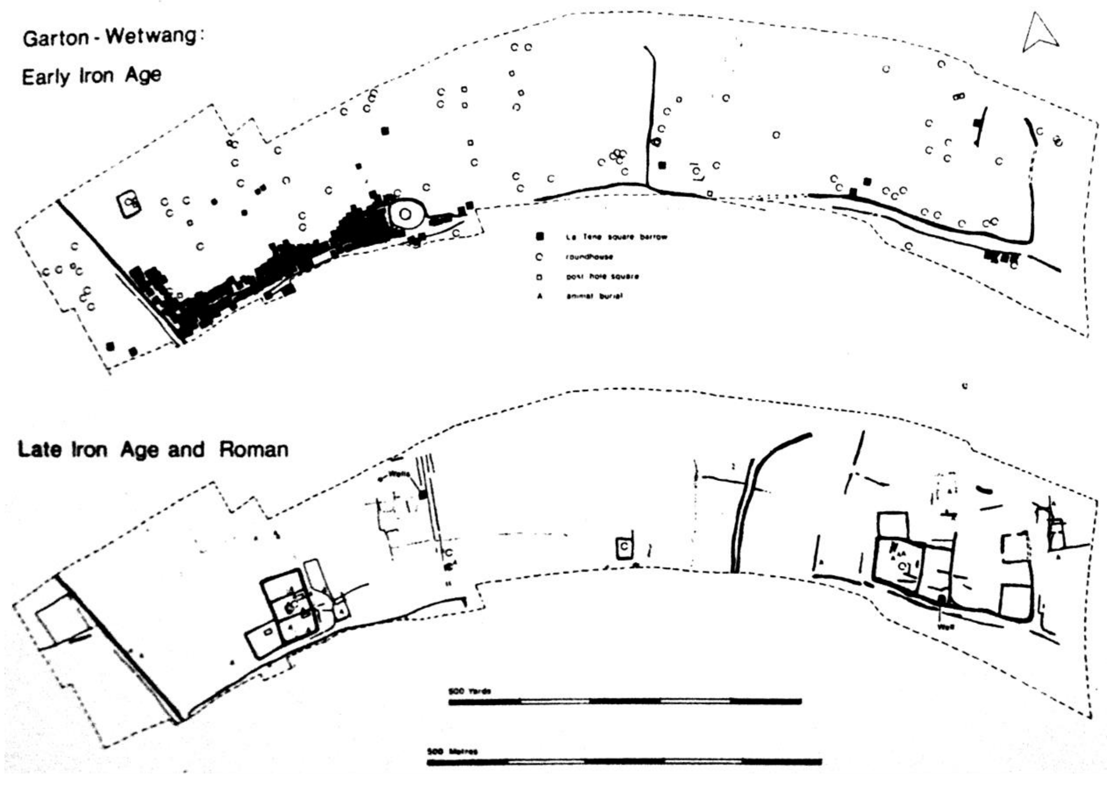


Fig 5.15 Dent's published interpretation of Wetwang-Garton Slack phasing, broken down into two main stages
Compare with Fig 5.9. (Source: Dent 1983: Fig. 3)

5.3 Site biography

This project takes a biographical approach to landscape (see Section 2.2.2), arguing that one can write the life history of a place in the same way that one can write the life history of a person or artefact. Indeed, the biographies of people, animals, things and places are interwoven and mutually constituted, and thus a place must be understood not only in terms of its physical geography and chronological phasing, but also in terms of the other stories that developed within and around that place—namely, those of people. This section attempts to write the biography of the Wetwang-Garton Slack earthworks, analysing them both as discrete features worthy of their own stories and as components in a wider narrative about life for the people of the Iron Age Yorkshire Wolds.

As discussed in Section 2.2.2, Giles (2012) has written the biographies of people (both individuals and communities) and objects at Wetwang-Garton Slack, considering how their lives would have been intertwined with those of features in the landscape, such as linear earthworks. The following site biography builds upon these stories but makes the earthworks themselves the protagonists; it turns the focus towards the excavated ditches and considers how the life history of the main earthwork at the heart of the settlement-cemetery complex would have changed over time.

5.3.1 Site biography: detail of areas with earthworks

Most of the sites across Wetwang-Garton Slack with earthwork components (MD1-3, the Central Berm and perpendicular boundaries) offered a detailed level of information in the form of text and illustrations. However, some sites were excavated with great haste ahead of the ever-encroaching quarry, and thus provided lower-quality data. Some of the stratigraphic relationships illustrated by the section drawings are dubious, but given the difficult working conditions and the fact that chalk can be difficult to see in less than ideal weather conditions (e.g. full sun), the occasional inconsistencies and contexts that seem to defy typical site formation processes (e.g. gravity) are easily forgiven.

No radiocarbon dates were obtained from the earthwork itself (only from features with relationships to main ditches, e.g. square barrows), and relatively few finds were recovered from the main earthwork and its associated N-S boundaries. Erosion and the constant use of the Central Berm would have reduced likelihood of finds surviving in situ between the ditches; even if such evidence had survived, Brewster did not excavate the Central Berm, electing instead to focus on the main ditches. Although they may have once contained dating evidence pertaining to their earliest phases, the re-cuts and regular maintenance of the main ditches would have removed virtually all of their early deposits. Therefore, artefacts and burials from basal fills are likely to represent secondary or later phases of earthwork use or modification, after the ditches were no longer being regularly cleaned or re-cut. Those finds that were recorded, including formal burials and deposits of animal bone, are listed in Appendix B.

Descriptions of individual sites that contained evidence of the main earthwork and its perpendicular boundaries are provided below. Those sites which provided more detailed evidence are treated more discursively, and those where excavation was limited are given as much attention as is appropriate. As the earthwork was excavated from east to west, the sections below follow roughly the same geographical pattern.

5.3.1.1 GS1-2

The evidence for the presence of the Wetwang-Garton linear earthwork in GS1-2 is tenuous at best. Brewster uncovered a ditch cut into the eastern side of the site's hybrid Neolithic long barrow/Bronze Age round barrow (Mortimer's Barrow 37), which he interprets to be Iron Age in origin with a Roman re-cut (Fig 5.16; Brewster 1980 [2010]: 38, 82, 107-108). This dating is unsubstantiated by any diagnostic finds—indeed, no finds are mentioned in the report chapter on GS1-2 (Brewster 1980 [2010]: 75-110), nor does the site's finds register provide any clues. It is possible that Brewster arrived at Iron Age and Roman dates for the ditch based on morphology, or that finds were recovered but not recorded. He proposes that this ditch is the continuation of

MD2, citing Mortimer (1905)'s map but arguing that Mortimer had been 'misled by the Stain of the scrape-hollow channel [shallow barrow ditch] on the western side of the long barrow', incorrectly identifying it as an earthwork (Brewster 1980 [2010]: 38). Brewster did not see evidence of an earthwork ditch to the west of the long barrow, but the excavated area was limited and it is entirely possible that he missed another Iron Age earthwork ditch where Mortimer had identified one. Brewster had not plotted the course of MD3 as it would have descended into the valley, so when he came to join up the various segments of the main ditches, he only expected to see MD2 in the vicinity of GS1-2. Taking into account the wide Central Berm and the fact that the secondary phase of MD1 in the Wetwang cemetery encircles a round barrow, it is not impossible to imagine that Brewster and Mortimer might have been mapping different, but parallel, ditches. However, as the plan of this stretch of the valley remains incomplete, the exact nature of the earthwork ditches in GS1-2 cannot be satisfactorily resolved.

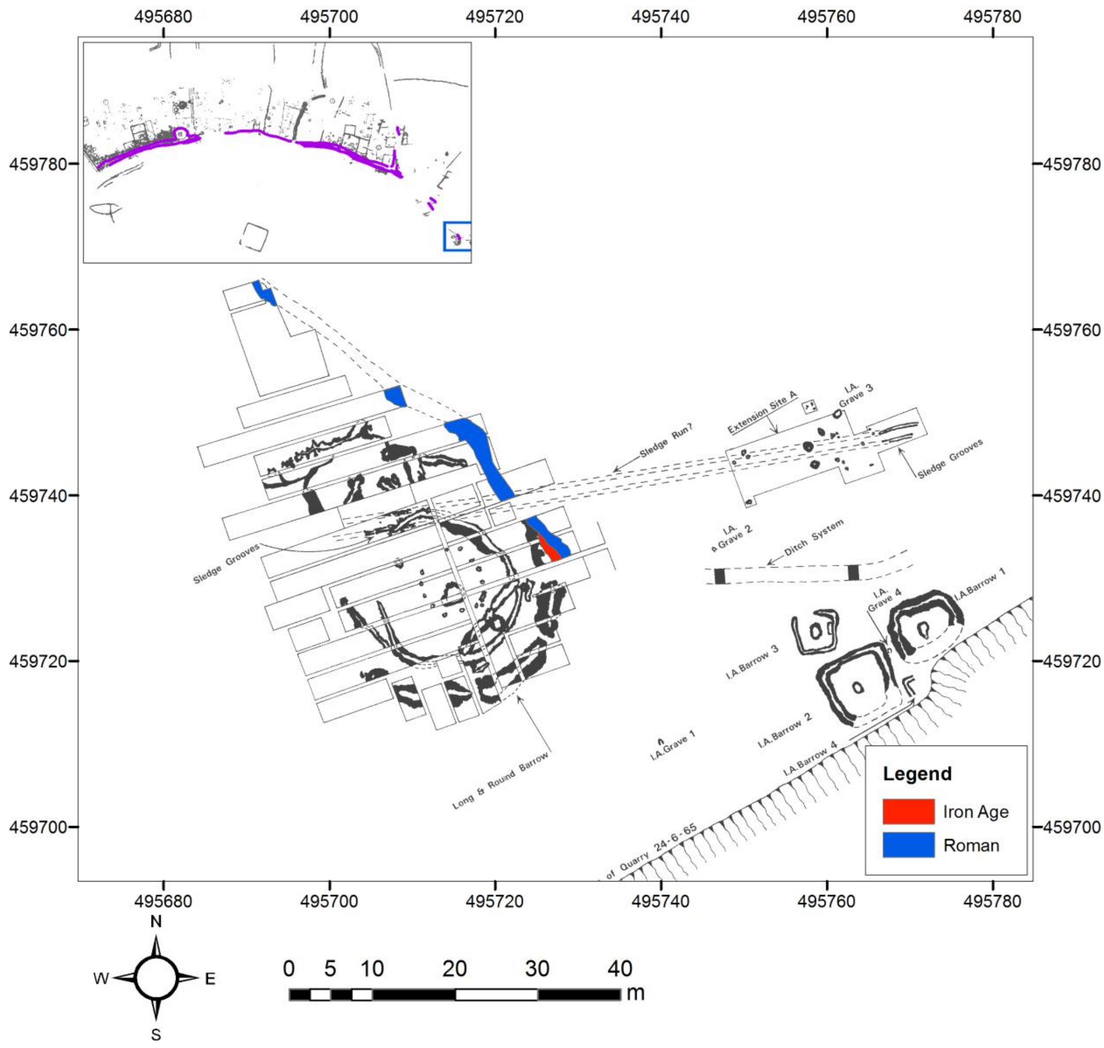


Fig 5.16 GS1-2
Contains archival data. Courtesy of the Wetwang/Garton Slack Project archive.

5.3.1.2 GS3b

A narrow excavation area in GS3b revealed two monumental ditches, Ditches 6 and 7, which represent MD3 and MD2m, respectively (Fig 5.17). Ditch 7 measured a variable 3-4m wide and was approximately 1.4m deep (Fig 15.18a), which is consistent with the sizes of MD1 and MD2. Brewster (ibid.) argues that this represents the continuation of MD2, which seems likely, given its alignment and position along the same contour the valley bottom. Ditch 6 (Fig 15.18b) was of a similar size, measuring approximately 2m wide and 1.2m deep, although it contained no finds. There was a 13m gap between the two, so it is likely that Ditch 6 is the continuation of MD3, and that the gap represents the Central Berm. Two smaller ditches cross the berm perpendicular to Ditches 6 and 7, and the presence of rectilinear enclosures 50m to the north-east of Ditch 6 indicates that this area was modified in the Late to Roman Iron Age.

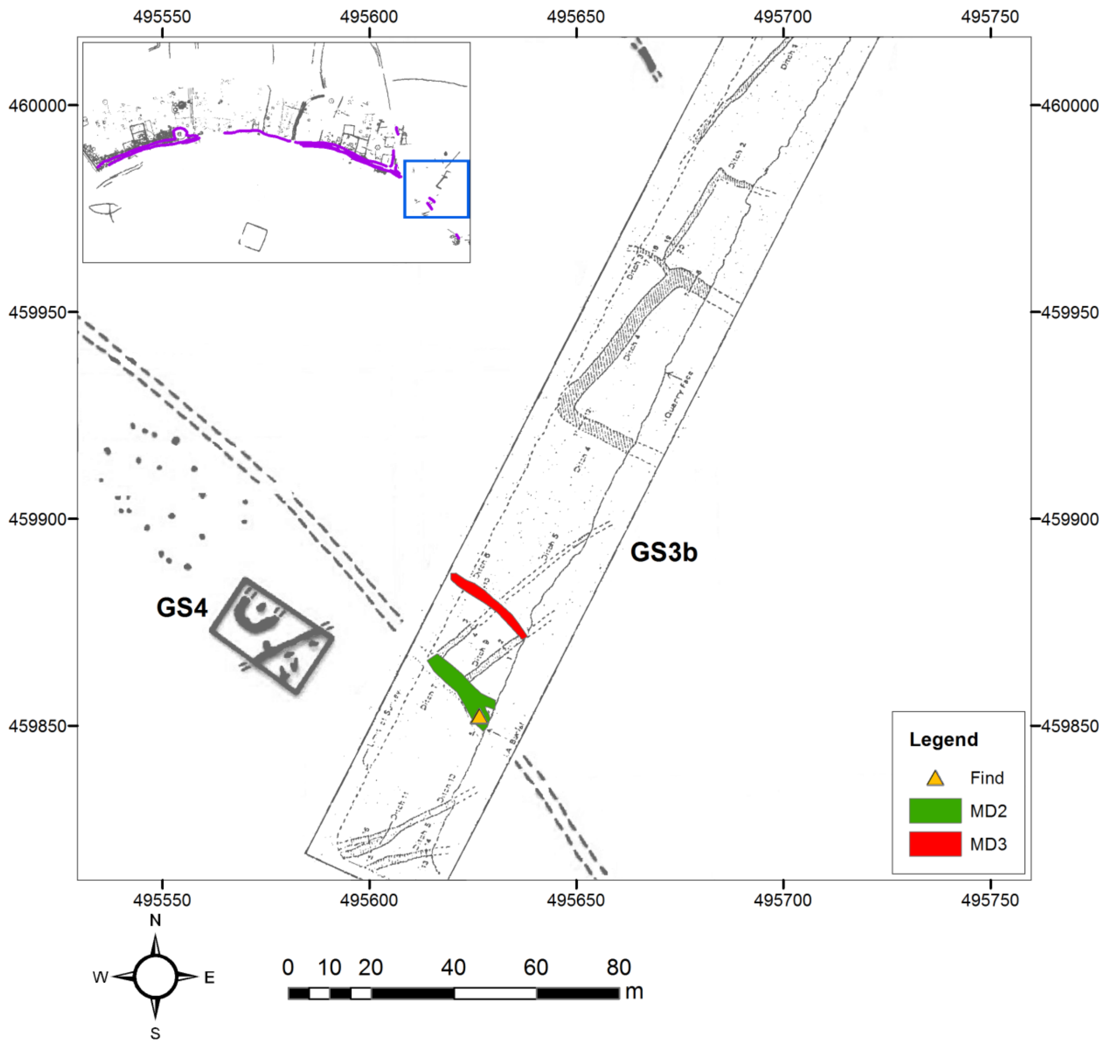
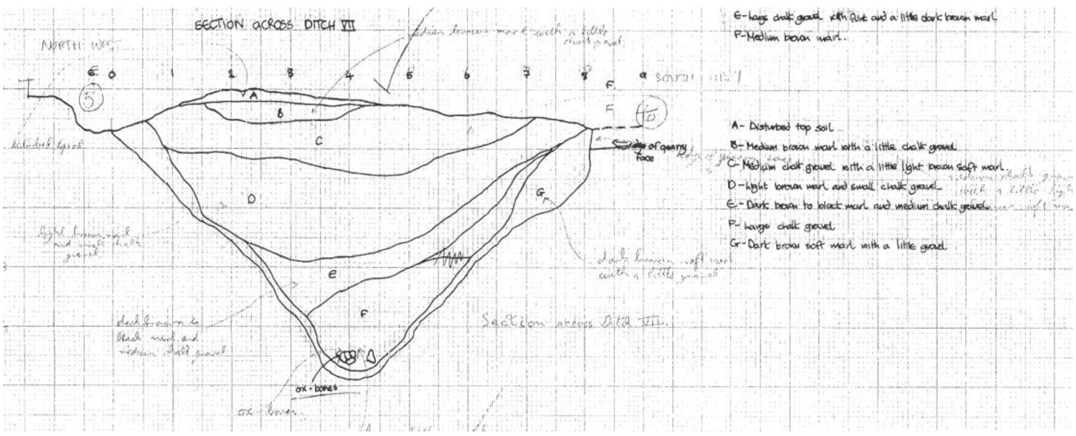


Fig 5.17 GS3b
The location of the ox bones and flint blocks is indicated by the triangle. This also marks the approximate location of Burial 1. Brewster's report does not make it clear if the burial was found with the ox bones and flint blocks, or simply near to them. Contains archival data. Courtesy of the Wetwang/Garton Slack Project archive.

In its base and near the 1968 face of the quarry (the south-east edge of the excavation), Ditch 7 contained an inhumation and a deposit of ox bones and flint blocks (Fig 15.18a, Layer F; Brewster 1980 [2010]: 125]. The burial was of an adult male, approximately 35-45 years old and 176cm tall (Fig 15.19; Dawes, in Brewster 1980 [2010]: 533, Pl 128-129). The burial of people in the bases or lower fills of the earthwork ditches occurs in multiple locations along the valley, presumably when the community no longer intended to clean out or re-cut the ditches. If burials had been deposited in the ditches whilst they were still being maintained, the bodies would have been disturbed and would have become disarticulated. The lack of disarticulated remains in the earthwork ditches and the presence of intact inhumations suggests that the ditches became an appropriate place to bury the dead only at a later stage in time. Büster's (2012: 327-329) concept of *transitional deposits* may apply to these burials, helping to distinguish them from other patterns of structured deposition. They appear to occur at a time of transition, when the earthwork-road was changing from a monument with open ditches to one with infilled ditches. The lack of disarticulated remains indicates that they are not likely to be foundation deposits—the initial phase of construction likely would have created open, clean ditches—and the predominance of human remains in the ditch bases or lower fills (e.g. GS7; see Section 5.3.1.5), rather than in middle or upper fills, suggests that the majority of these burials were not inserted into the ditches after they had fully silted up. Given the assumption that road was in use for the same sort of movement both before and after ditches had silted up (i.e. the monument was not abandoned, but rather remodelled), the burials would not represent closing deposits, either.

a



b

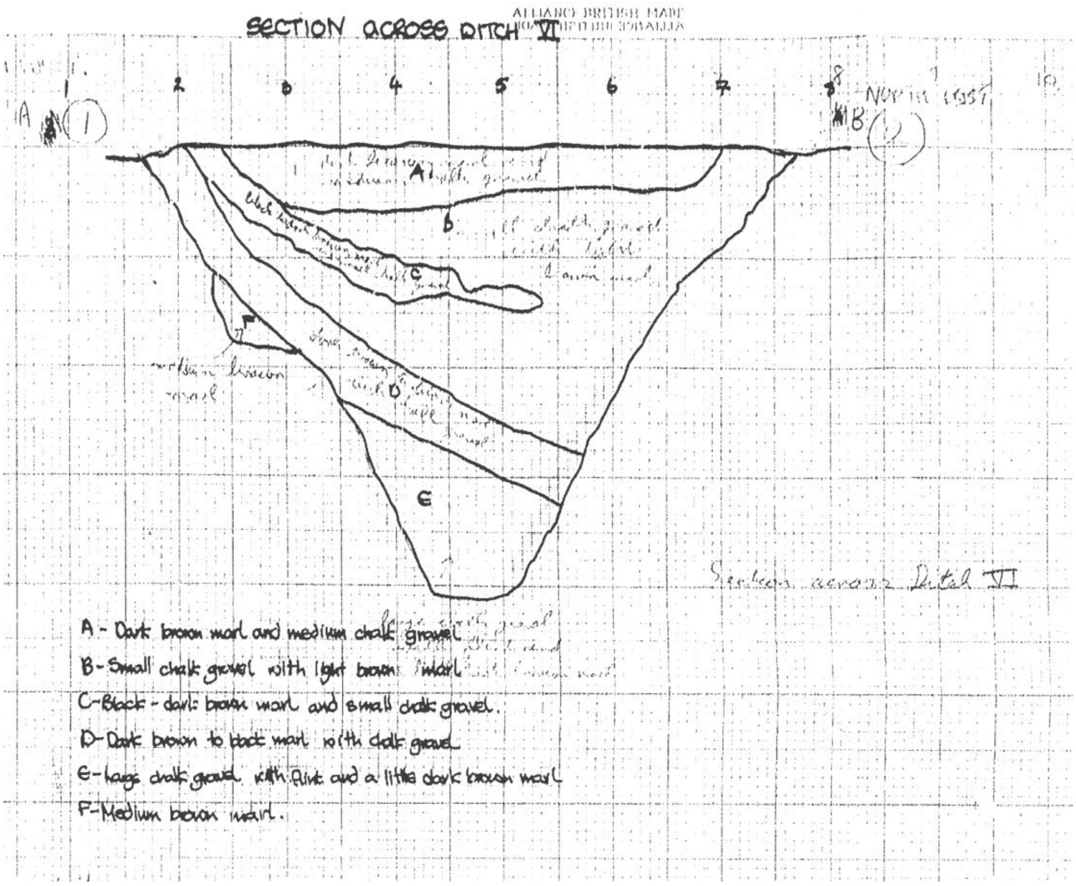


Fig 5.18 Sections of Ditches 7 and 6 (MD2 and MD3)
(Source: Sections 3.9 and 3.8) Courtesy of the Wetwang/Garton Slack Project archive.

a **b**

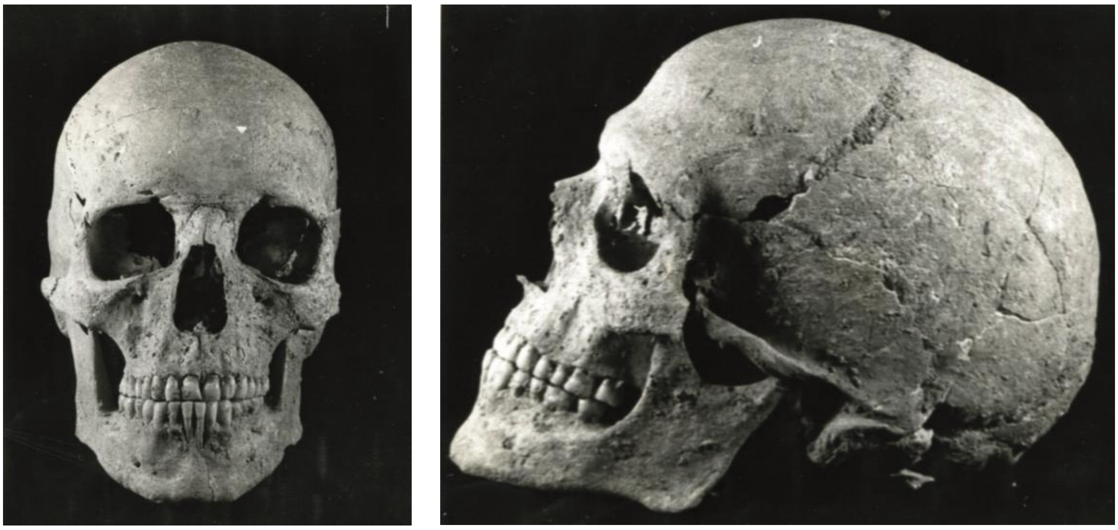


Fig 5.19 GS3b Burial 1
No plan of Burial 1 in situ survives, so the approximate location of this individual is marked with a triangle on Fig 5.17. (Source: Brewster 1980: Pl 128 and 129) Archival photographs courtesy of the Wetwang/Garton Slack Project archive.

5.3.1.3 GS6

GS6 is the only site where all three main ditch segments (MD1-3) were present (Fig 5.20). MD2 crossed the southern portion of GS6, orientated NW-SE. Here it measured 2.2-3.3m wide, and where it was sectioned (grid Sec X3), it was 0.8m deep (Fig 5.21). Running parallel to MD2 were the southern portions of MD1 and a small ditch that could be a later phase of MD3; MD3 itself was detected at the edge of the excavated area, and was only sectioned in an extension to grid Sec N. Both MD3 and MD1 turned northwards in the centre of the site. MD1 measured 2.2-3.6m wide and had a double-based profile in grids Sec Q4 (Fig 5.21) and Sec Q2, measuring 0.7-0.9m deep at its wider base and 0.4-0.5m at its smaller one. This might suggest multiple episodes of construction and modification. When MD1 had silted up to approximately the modern ground level, its eastern edge was re-cut by Late to Roman Iron Age rectilinear enclosures along its western side (Fig 5.20-21), expanding the overall width of the ditch sections to in excess of 4m.

Narrow palisade slots were found between MD2 and MD3, and between MD1 and MD3. The palisade slot parallel to MD2 turns a right angle to the south at the western end of the site, crossing over MD2 and presumably carrying on outside of the excavated area. Thus, these slots appear to belong to a later phase of land division, and they may represent fences, rather than palisades in the traditional sense of the word. There are analogues for this type of feature in the Wetwang cemetery (discussed below in Section 5.3.1.18), and Dent (nd; see Fig 5.9) assigns them to the Late/Roman Iron Age, when the people of Wetwang-Garton Slack began parcelling up their land into small, rectilinear plots. The combination of the palisade slots and the small ditch possibly associated with MD3 would have narrowed the space available on the Central Berm from 10-14.5m to 7m along MD2 and 5.5-6m between MD1 and MD2. This would have still allowed for the movement of people, animals and vehicles along the earthwork, albeit in a slightly more restricted manner.

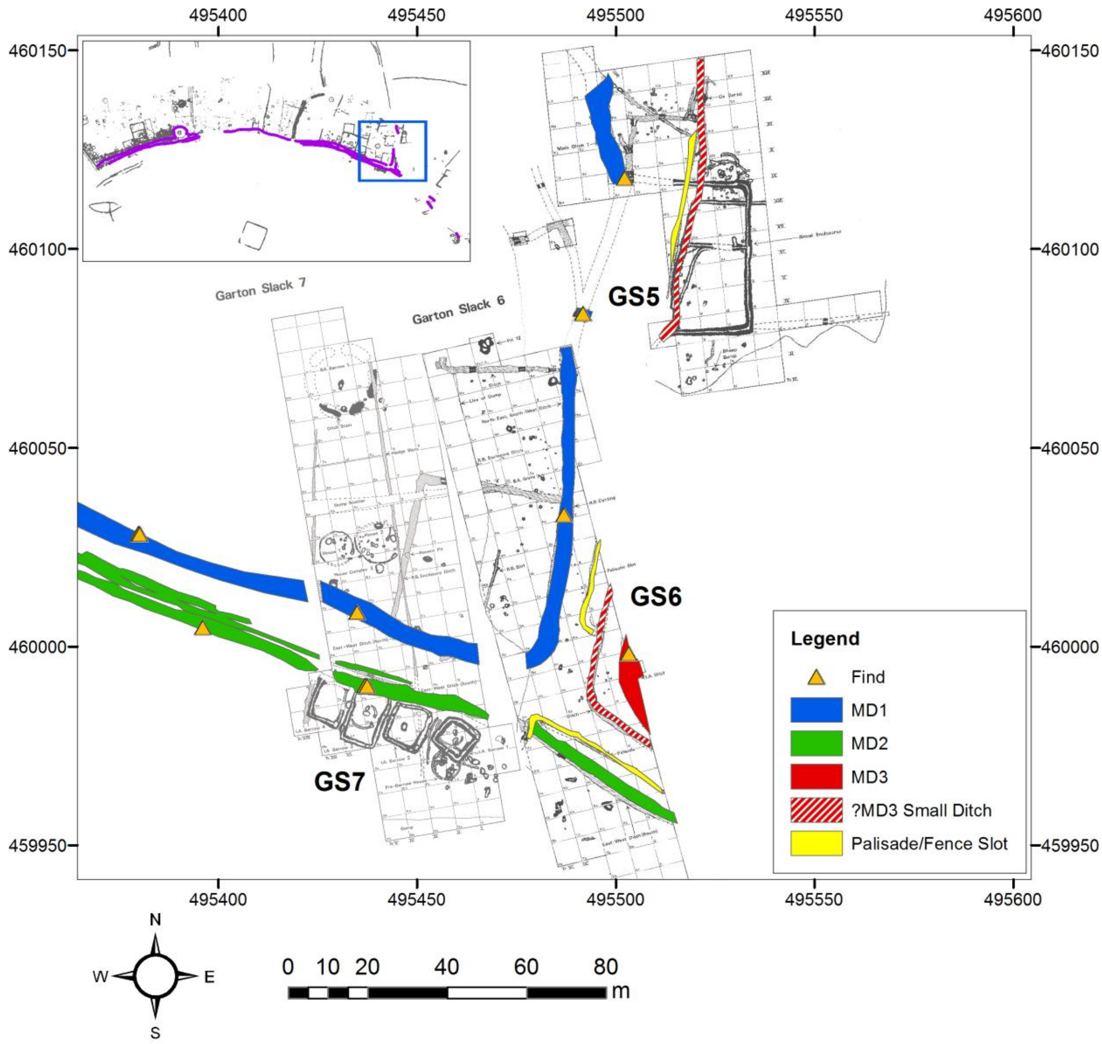


Fig 5.20 MD1-3 in GS5-7
Contains archival data. Courtesy of the Wetwang/Garton Slack Project archive.

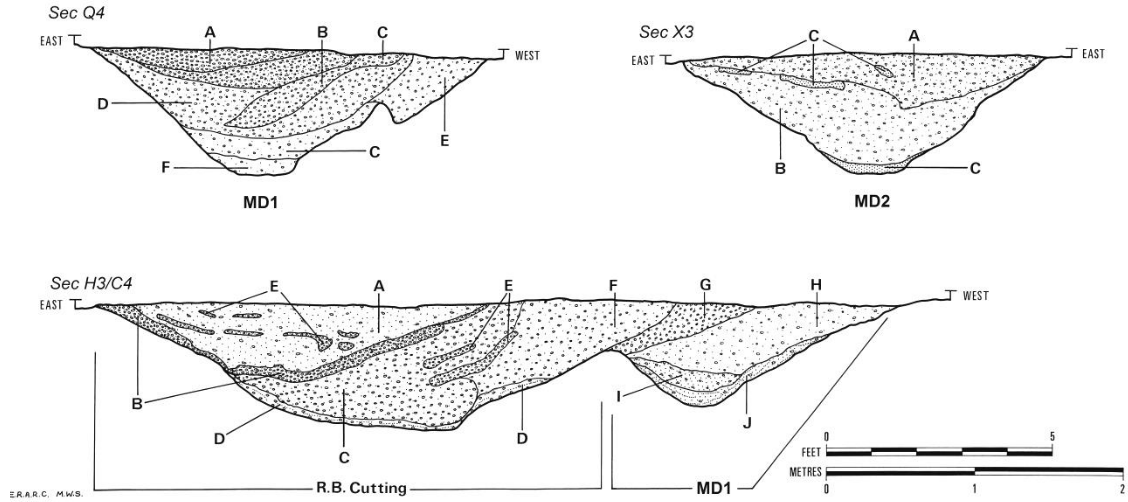


Fig 5.21 Sections of MD1 and MD2
After Brewster (1980: Fig 93). Courtesy of the Wetwang/Garton Slack Project archive.

5.3.1.4 GS5

MD1 continued from the north-east corner of GS6 into the south-western side of GS5 (Extension B, grid Sec D4; Fig 5.20), where it was again re-cut by a rectilinear enclosure ditch. The original ditch was probably 2.6m wide and 1.4-1.5m deep in this extension, although its eastern side was obliterated by the later re-cut and thus its dimensions have been estimated (Fig 5.22). Late Iron Age pottery was found in the chalky rainwash fill (Layer E, D4) of the rectilinear enclosure re-cut. The next section of MD1 to be excavated was 30m to the north-east in grid Sec Z3, where yet another rectilinear enclosure complex had been constructed alongside the original ditch (re-cutting MD1 only in its final phase of construction, Phase 4b). Brewster calls these the GS5 'Ritual Enclosures' (1980 [2010]: 147-158), and they contained chalk figurines and incised chalk blocks, which were disturbed prior to the excavation (1980 [2010]: 155, 171). In the centre of the Ritual Enclosures, a ditch running N-S and a parallel palisade slot (Fig 5.23) seem to represent the continuations of the MD3 late phase small ditch and its associated palisade, last encountered in GS6.

Iron Age pottery and silty, rainwash-like material were found in MD1 where it adjoined western edge of the enclosure. Considered in conjunction with the rainwash material in grid Sec D4, Brewster argues this to be evidence of a major flooding episode in the Late Iron Age, when water rushing down from the hillside to the north 'churned up the bottom of the trench [main ditch] and removed all previous deposits prior to filling the ditch, from top to bottom, with the water-borne material' (1980 [2010]: 162). Whether cleaned by a weather event or by people, the fills of MD1 and its re-cuts, with their lack of Roman finds, may suggest that the ditches had silted up by the Roman Iron Age, or that the people living around them took care not to deposit material in them (in contrast with the other ditches of the Ritual Enclosures).

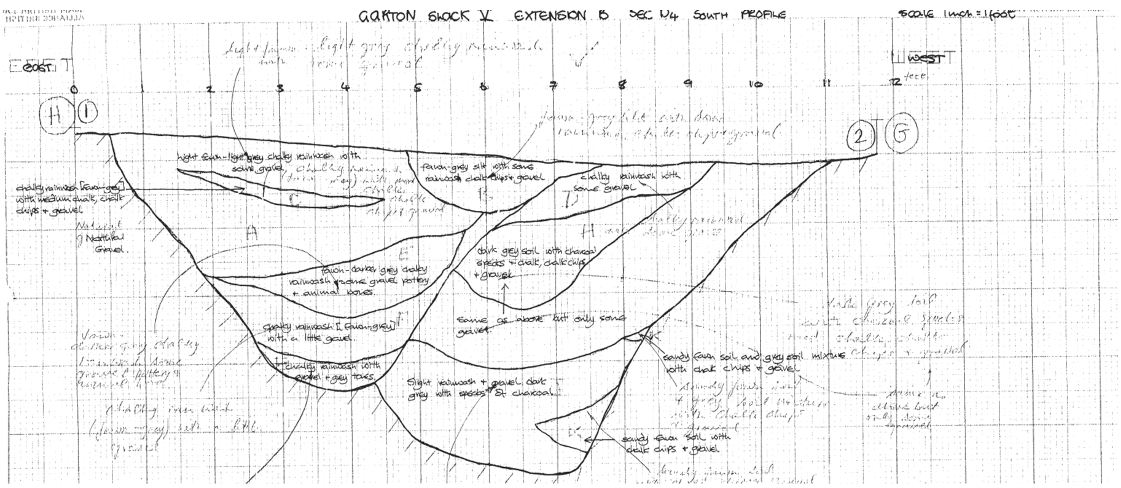


Fig 5.22 MD1 being re-cut by rectilinear enclosure ditch
(Source: Section 5.51) Courtesy of the Wetwang/Garton Slack Project archive.

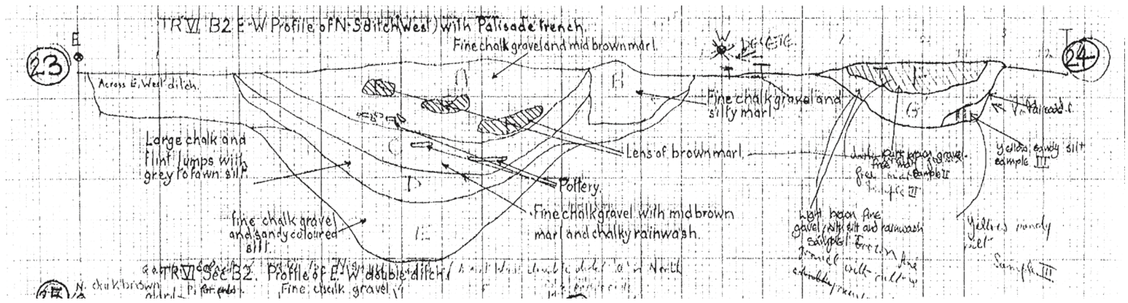


Fig 5.23 ?MD3 small ditch and palisade
(Source: Section 5.44) Courtesy of the Wetwang/Garton Slack Project archive.

5.3.1.5 GS7

In GS7, MD1 and MD2 run parallel to each other on a W/NW-E/SE alignment (Fig 5.20). They maintain roughly the same widths as in GS6, and a small ditch to the north of MD2 may represent a continuation of the boundary created by the GS6 palisade slot. However, further to the west in GS8 this small ditch widens to over 3m across, and thus has been treated as a phase of MD2, rather than a separate palisade. To the south of MD2 are four square barrows (Fig 5.24), including the central grave in Barrow 2, known for its La Tène mirror. Barrows 3 and 4 appear to cut MD2, although the junctions of the barrow ditches and MD2 were not excavated to their full depths (Brewster 1980: Fig 96, 109), so the stratigraphic relationship amongst these features is not entirely clear. However, based on the relationships of the main ditches to square barrows elsewhere across the valley, the first phase of MD2 is likely to be earlier than these Middle Iron Age funerary monuments.

Fig 5.24 GS7 barrow cemetery and MD2
Note the square section in MD2 in front of Barrow 3 (second from the right), where the unnumbered infant burial (Fig 119) was located. (Source: Brewster 1980: Pl 38) Courtesy of the Wetwang/Garton Slack Project archive.

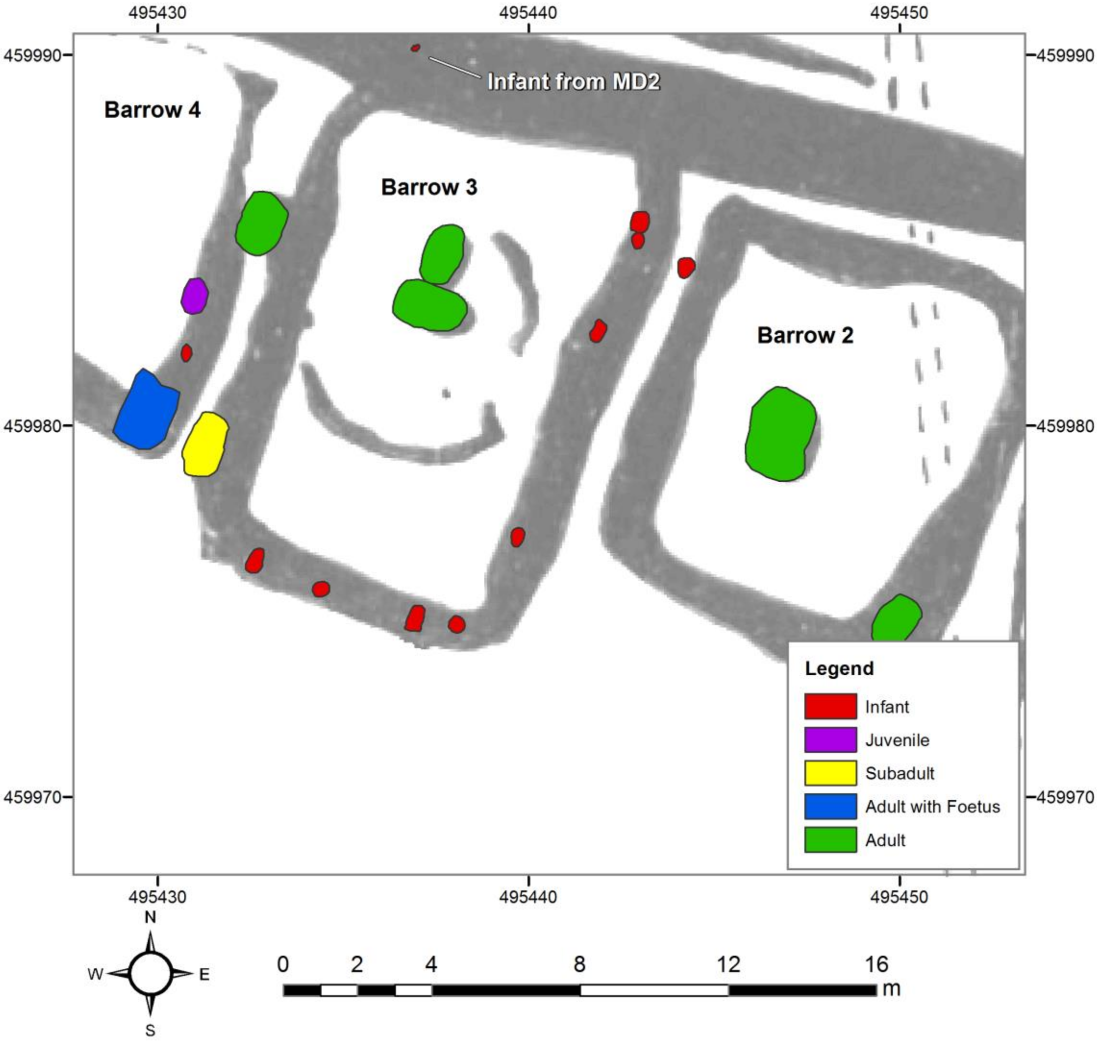


Fig 5.25 GS7 Burials within and to the south of MD2
Contains archival data. Courtesy of the Wetwang/Garton Slack Project archive.

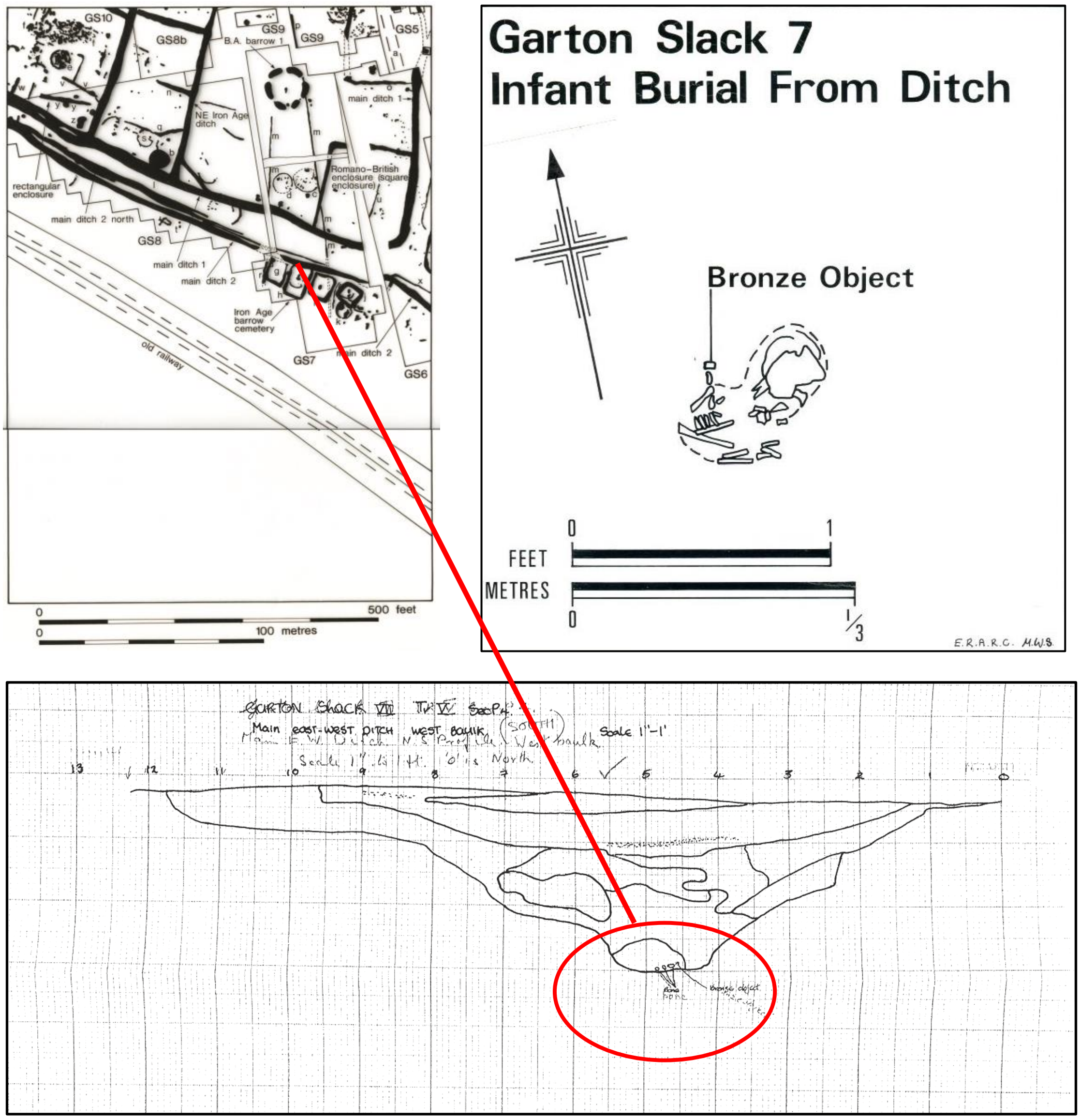


Fig 5.26 GS7 infant burial from Main Ditch 2
The burial appears to be a badly damaged crouched inhumation, with the infant possibly buried on its right side, facing north-west. The plan of the burial is not clear enough to determine whether the bones are articulated, but where infant or child burials occur elsewhere in Wetwang-Garton Slack, that seems to be the predominant burial rite. A bronze object was buried with the infant, in a position that is suggestive of being near the hands. The section drawing which records the location of the burial in the base of MD2 only labels it as ‘bones’ and a ‘bronze object’. Contains archival data. Courtesy of the Wetwang/Garton Slack Project archive.

In the base of MD2, immediately to the north of Barrow 3 (grid Sec P4), an infant of undetermined age was buried with a bronze object (Brewster 1980: Fig 119; Hull Museum Accession Number KINCM:2006.11303.1548; Fig 5.24-5.26; location also marked by stack of triangles on Fig 5.20). This burial is not described in any detail in Brewster’s report, receiving only a brief mention in one sentence in the overview summary of MD2, which states that ‘several burials were located in the bottom of the ditch [MD2], including two in sites 3b and 7’ (Brewster 1980: 30; Brewster 1980 [2010]: 38). No description of either the infant or its grave good appears in the report’s chapter on GS7 (such a description would be expected in Brewster 1980: 233-239, where other infant burials and nearby Fig numbers appear; Brewster 1980 [2010]: 38), and it cannot be found among any of the infant graves or main ditch graves listed in the 1980 index, or in the osteology appendix (Dawes, in Brewster 1980 [2010]: 526-582). The only evidence for the grave mentioned at the beginning of the report being that of an infant is represented by a single Fig (Brewster 1980: Fig 119), which does not tie in with any of the text. An archival copy of the Fig survives (Wetwang/Garton Slack Project Archive, Brewster Finds: Not Drawn Box), as well as a section drawing of MD2 which has the words ‘bones’ and ‘bronze object’ written next to its basal fill (Wetwang/Garton Slack Project Archive, Brewster Sections: GS7, Section 7.66). It is only after marrying this section drawing with Brewster’s Fig 119 and the stray sentence about a MD2 burial in GS7 (Brewster 1980: 30; Brewster 1980 [2010]: 38) that it becomes apparent that these all refer to the same person.

The placement of this forgotten infant in the base of MD2 is consistent both with other main ditch inhumations, which tend to occur in the ditch bases more frequently than in their upper fills, and with other Wetwang-Garton Slack infant and child burials, which often occur in ditches. Barrow 3 in GS7, immediately to the south of the MD2 infant, has seven satellite infant burials, and Barrow 4 to its west has in its ditch the remains of one infant, one juvenile and one adult woman with a foetus (Fig 5.25). Outside of the concentration of infants in GS7, the majority from across the settlement-cemetery complex occur in the GS10 infant and animal cemetery (Brewster 1980 [2010]: 244-257; see also Giles 2000: 195-196). Barrow ditches seem to have been considered an appropriate place to bury infants, and the same principle appears to apply to the main ditches. By having monumental square barrows built alongside—and at times on top of—it, and by containing more modest burials deep within its ditches, the earthwork itself took on a funerary character. Anyone who regularly walked or drove a vehicle along the Central Berm in the Middle to Late Iron Age would have been aware of the dead lying buried around them, and perhaps even beneath their feet.

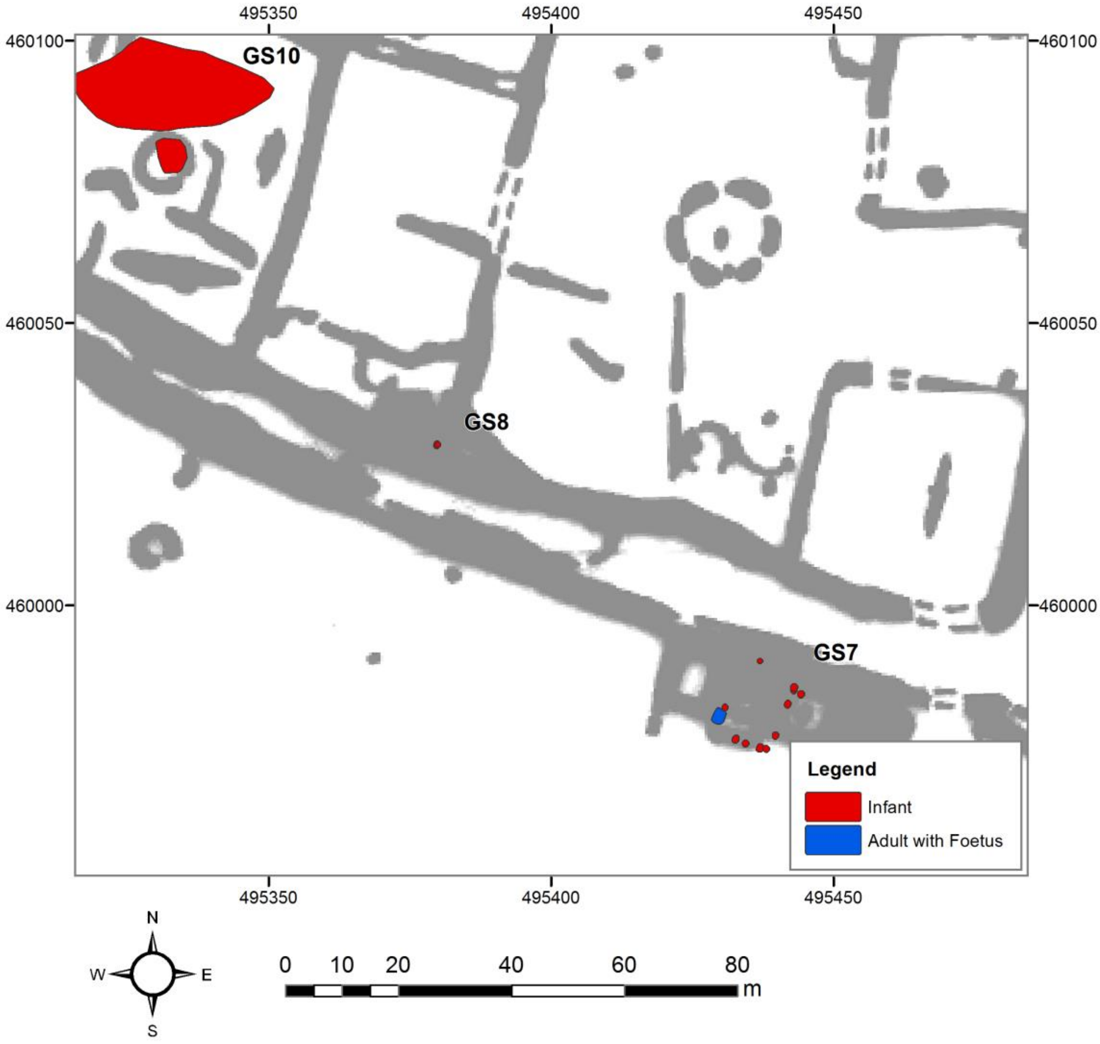


Fig 5.27 Context of GS7 infants
The majority of infant burials in the slack occur in the GS10 infant cemetery and an adjacent roundhouse. Four people, including two infants, were buried in a grave cut into the base of MD1 in GS8. Contains archival data. Courtesy of the Wetwang/Garton Slack Project archive.

5.3.1.6 GS8

In GS8, MD1 and MD2 continue along the same alignment as in GS7. Brewster argues that both MD1 and MD2 show at least two episodes of re-cutting and deepening in this site (1980 [2010]: 217). MD2 comprises two to three ditches (Fig 5.28), which begin as one large southern ditch and one smaller northern ditch in the eastern portion of the site, both of which are present in GS7. Moving westwards, another ditch segment abuts and then joins together with the smaller northern ditch, creating a ditch of equal width to the larger southern MD2 ditch (which can be traced back to GS6). These smaller ditches are hypothesised to be later phases of MD2, perhaps contemporary with the rectilinear ladder enclosures found across Garton Slack, which tend to re-cut the Main Ditches or cut the undisturbed ground immediately next to them. In GS8, the secondary MD2 ditches narrow the Central Berm to approximately half of its original width, slightly restricting movement as in GS5-6, where a small ditch and palisade were added to the branch of the Central Berm that lies between MD1 and MD3.

MD1 was modified by the construction of rectilinear enclosures to its north; the largest of these (located in the western half of the site) re-cut MD1 on its southern side. Combined with the addition of a second ditch to MD2, this Late Iron Age re-cut drastically narrowed the Central Berm but still left it navigable for traffic. This enclosure bounds the infant cemetery and roundhouse referred to above (Fig 5.27), where 33 infants, three complete animals and 14 partial deposits of animal bone were buried (Brewster 1980 [2010]: 244-257; Giles 2000: 195-196). To the east and within the boundary of a smaller enclosure, a well was constructed to the north of MD1 (Fig 5.29-30), and around the same time that the well was in use, a Roman bath, complete with hypocaust, was built immediately to its south in the fill of MD1 (ibid.: 223-225). Approximately halfway down the well shaft were the remains of a subadult male, a pregnant dog and a sheep, interpreted by Brewster as a shepherd boy who fell into the well whilst attempting to rescue a sheep, and possibly his sheepdog, only to be killed himself (Fig 5.29; Brewster 1980 [2010]: 213-214, Fig 144, Pl 49). Brewster (1980 [2010]: 217, 220-221) places the well's construction within the Late to Roman Iron Age, and proposes that it was abandoned by the 4th century AD. Thus, the boy is likely to have fallen in sometime during or after the Roman Iron Age.

There is an alternative explanation for the presence of the boy, the sheep and the dog in the GS8 well: one or more of those skeletons may represent a deliberate deposit, which would be in line with evidence from other Roman wells in eastern Yorkshire. The excavation of a Late Roman well at

Heslington East near York (Roskams et al. 2013) revealed a layer of structured deposition before the feature’s abandonment. The well contained butchered horse and cattle bones, which might represent either domestic waste or special offerings, and the well’s lower fills were sealed with the paired remains of young and adult cows and deer, as well as bones of a young dog, a complete greyware jar and a large cobblestone (ibid.: Section 5). Roskams and colleagues (ibid.) compare the Heslington East deposits with those of the wells of the Roman villas at Rudston (Stead 1980) and Welton (Mackey 1999), concluding that the practices at Heslington East fit within a wider context of ritual deposition (see also Fulford 2001). It is impossible to know whether or not the GS8 boy, sheep and dog were deliberately deposited, but it seems likely that their presence in the well would have been noted and remembered by the community, regardless of the manner in which they ended up there. If their bodies formed part of a closing deposit, then these three characters may have been selected because they were somehow special; if they fell in accidentally, then the circumstances of their deaths may have been lamented by the living, and perhaps even seen as fate or the will of the divine. Lying halfway down the well shaft, the boy, sheep and dog would have been far deeper in the earth than any of the other people buried in the square barrows and earthwork ditches across the site.

The GS8 well is not the only one found across the valley (e.g. the ‘Abortive Well’ in GS17; see Section 5.3.1.11); these wells and the GS8 bath indicate that the people living in Wetwang-Garton Slack relied on a constant source of water within the limits of their settlement by the Roman Iron Age. Whether they employed similar—or the same—wells during the earlier part of the Iron Age is unclear, but the location of the GS8 well alongside MD1 may be both practical and symbolic. The main ditches follow the contour of the southern side of the valley bottom, where a gypsey (seasonal stream) runs underground. By digging down in a low part of the valley bottom, rather than further upslope, water would be more accessible. Additionally, perhaps by placing the well alongside the earthwork ditch its builders intended for it to be in a neutral space, not controlled by any particular person or family. Finally, the relationship between the well and the earthwork ditch may reflect the wider connection that existed between linear earthworks and water sources on the high Wolds. Earthworks often elaborate or lead to water, as around the Gypsey Race or at one of the many springs plotted by Mortimer on his (1905) map. In the artificially-created environment of a settlement, it is logical to assume that people might be inclined to apply their wider cosmologies to their homes and communal infrastructure. It is possible that the Late/Roman Iron Age people who decided to dig wells in Wetwang-Garton Slack did so not only with their immediate surroundings in mind, but also with a desire to replicate the now-ancient relationship between linear monuments and fresh water.

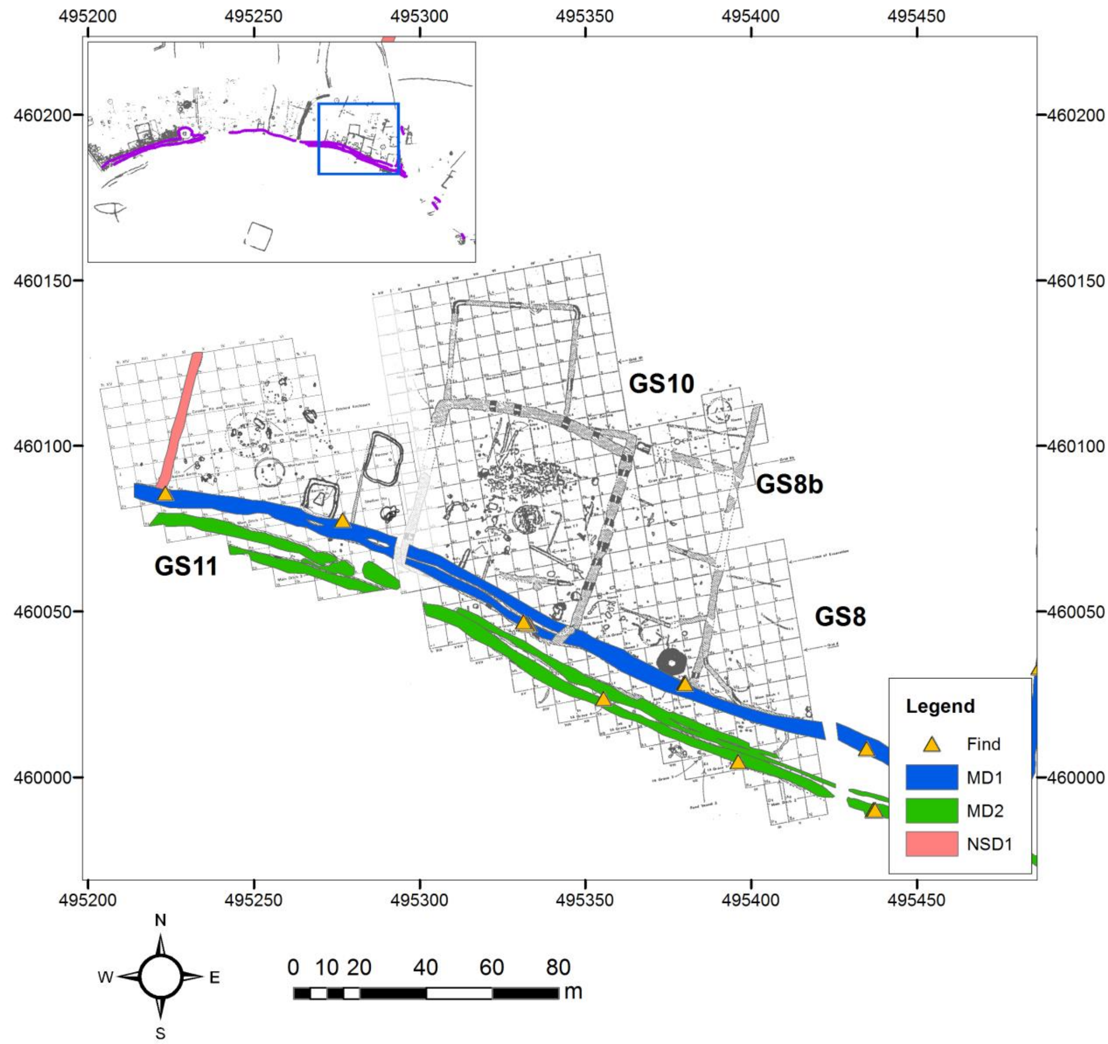


Fig 5.28 MD1-2 in GS8 and GS11
Contains archival data. Courtesy of the Wetwang/Garton Slack Project archive.

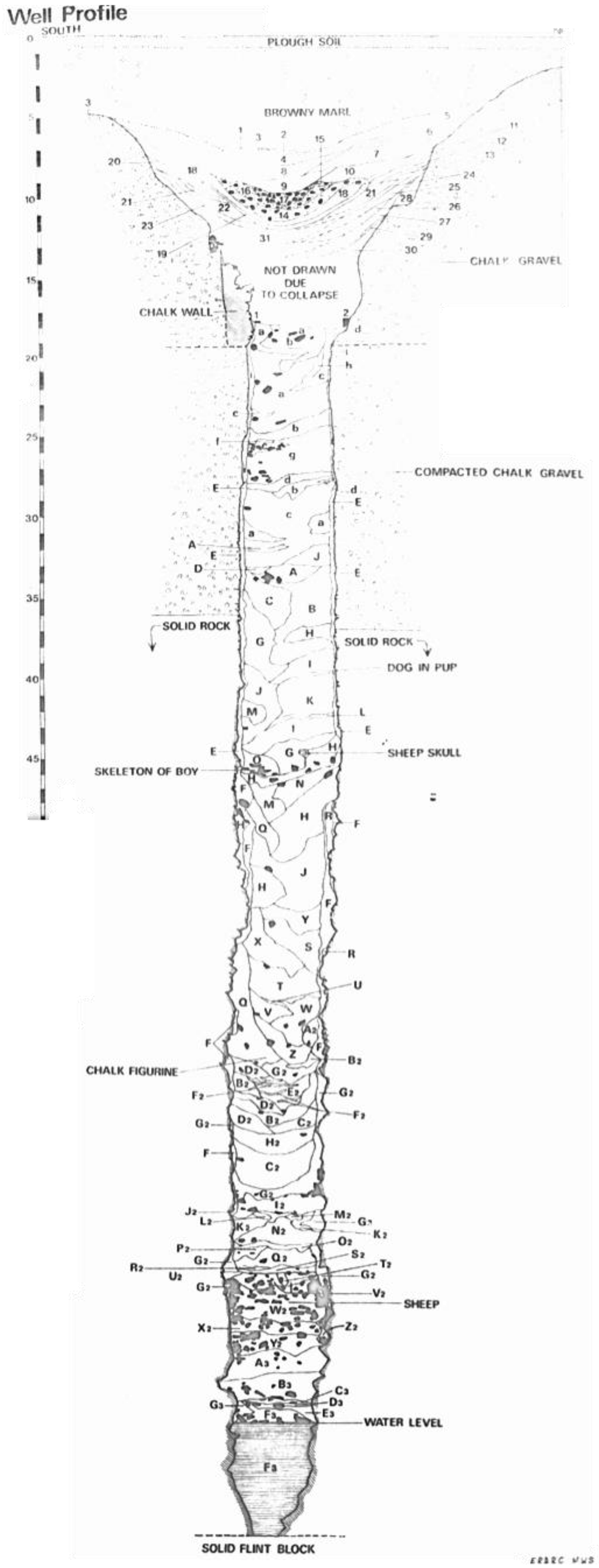


Fig 5.29 Plan of GS8 well
(Source: Brewster 1980: Fig 144) Courtesy of the Wetwang/Garton Slack Project archive.

Fig 5.30 Scuba gear required to excavate the base of the GS8 well
(Source: Brewster 1980: Pl 50) Courtesy of the Wetwang/Garton Slack Project archive.

MD1 and MD2 contained several graves in GS8, including a grave containing the remains of at least four people, which was cut into the base of MD1 to the southeast of the well and below the levels disturbed by the Roman Bath (Grave 3; Fig 5.31-32; Brewster 1980 [2010]: 211-212; Dawes, in Brewster 1980 [2010]: 542-543). Two infants (Burials 4 and 5) were buried alongside the remains of a subadult ?male (Burial 3), as well as the foot bones and neck vertebrae of at least one adult. These adult bones are not described or assigned a burial number in the main body of Brewster's (1980 [2010]) text, and are only mentioned in the osteology appendix by JD Dawes, who proposes (in Brewster 1980 [2010]: 543) that the foot and neck bones represent an earlier burial that was disturbed by Burial 3. This could suggest the use of the same section of MD1 for burial over an extended period of time, possibly with the removal of older bodies from the ditch bases. However, instances of disarticulated bones and bits of bodies within the main ditches are rare—all examples of human bone found within the main ditches are discussed within this site biography—and the constant, or even periodic, manipulation of bodies should leave more isolated human bones than are recorded across the valley. The paucity of disarticulated remains from the main ditches might be an artefact of the excavation process, though. The ditches were sectioned, rather than dug in length, and human remains sometimes went unrecorded or unreported (e.g. the forgotten infant in GS7). Perhaps the disturbance of the unnumbered adult's skeleton during the burial of Burials 3-5 was a usual occurrence, or perhaps it was unexpected. Alternatively, it is possible that the adult bones were deposited in their fragmentary state alongside the burial of the three children, either as curated pieces of an ancestor or as a token deposit of someone more recently deceased. However, the absence of scientific dates and the unclear stratigraphic relationship between the adult bones and the skeletons of Burials 3-5 mean that all such hypotheses must remain just that—tantalising as they may be, no single explanation is more plausible than another.

Fig 5.31 Archival photograph of GS8 Grave 3, Burials 3-5 and an unnumbered adult (partial)
Skeletons thought to be Burials 3 and 4 are clearly visible, but the other two burials are difficult to see. The remains of Burial 5 are thought to be located between Burials 3 and 4, on a slightly higher level. Brewster (1980 [2010]: 211-212) states that Burials 3 and 4 were buried in the same hollow, but that Burial 5 was located in 'a small depression of its own'. The subadult Burial 3 was buried with a penannular brooch, which was badly degraded. (Source: Photo [8] 111) Courtesy of the Wetwang/Garton Slack Project archive.

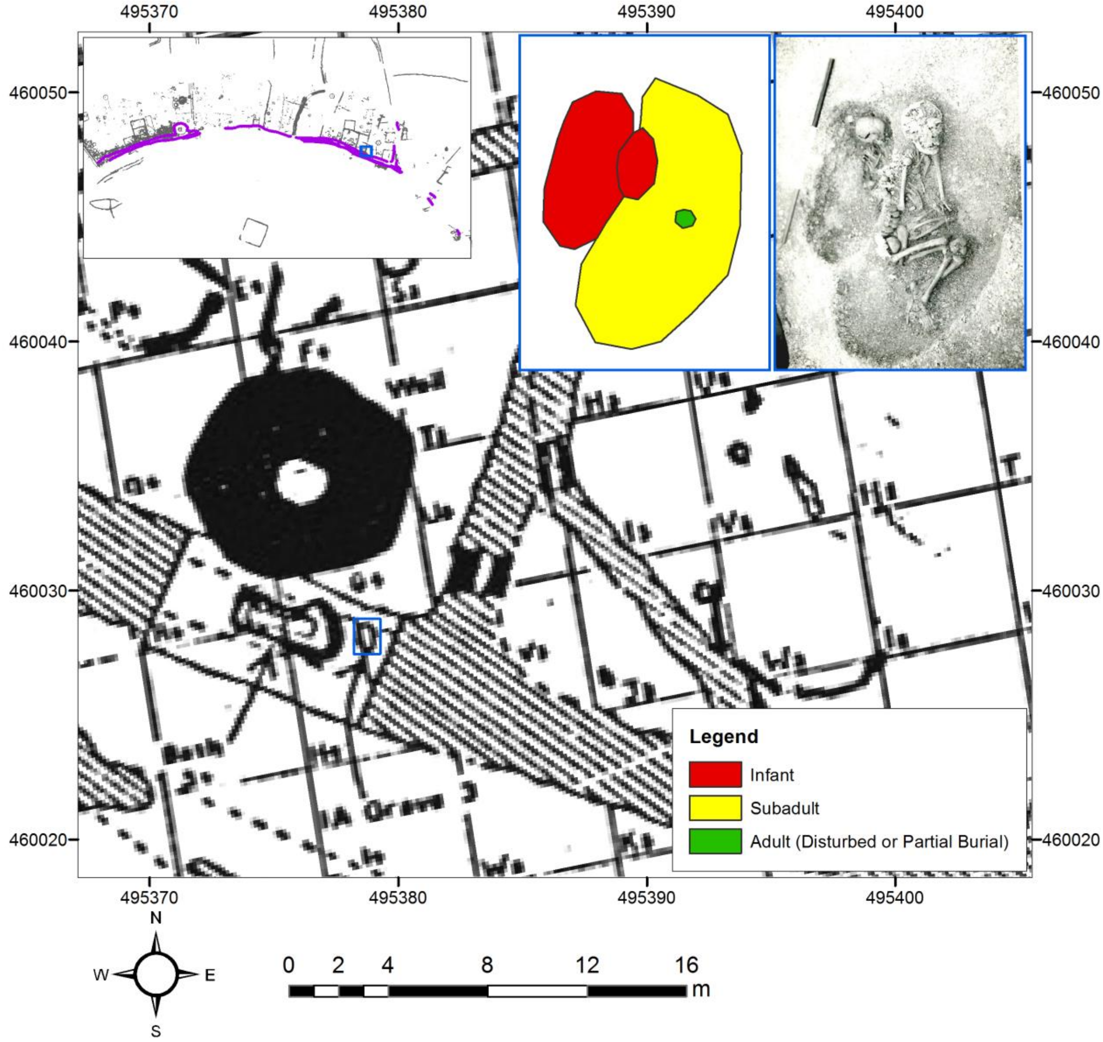


Fig 5.32 GS8 Grave 3, with Burials 3-5 and an unnumbered adult
The blue rectangle on the site plan marks the extent of the burial plan (inset, top centre) and photograph (inset, top right). The location of the adult bones is approximate; the Garton Slack osteology report indicates that they were located somewhere within the subadult's portion of the grave, but they are not described or assigned a burial number in the main body of Brewster's (1980 [2010]) text. Contains archival data. Courtesy of the Wetwang/Garton Slack Project archive.

5.3.1.7 GS11

MD1 and MD2 continue along the valley through the southern part of GS11 (Fig 5.28, 5.33). Here, a chariot grave (Brewster 1980 [2010]: 293-323) cuts into the upper fill of the northern side of MD1 (ibid.: 295, Fig 238), and the deepest (re-)cut of MD1 in turn appears to cut a perpendicular ditch, NSD1 (Fig 5.34). Beyond GS11, NSD1 runs through GS15 and GS13 (Fig 5.35), and its treatment across those three sites is variable. It is referred to as a Late Medieval boundary in GS11 (Brewster 1980 [2010]: 293) but an Iron Age ditch in GS13 (ibid.: 338). It is not described at all in GS15 but appears on the site plan (ibid.: 364, Fig 315). No finds appear to have been recorded from the ditch. Its phasing as probably Iron Age is based on the morphology of its junction with MD1. Here it appears similar in profile to that of the junction of NSD2 and MD1 in GS14, so despite the confusion over the ditch's date, it has been included in plans of the major prehistoric boundaries of the valley within this chapter.

Fig 5.33 Garton Slack 11 aerial photo
Looking north, with chariot grave cutting MD1 in centre right, and NSD1 running perpendicular to MD1-2 in centre left. (Source: Brewster 1980: Pl 70) Courtesy of the Wetwang/Garton Slack Project archive.

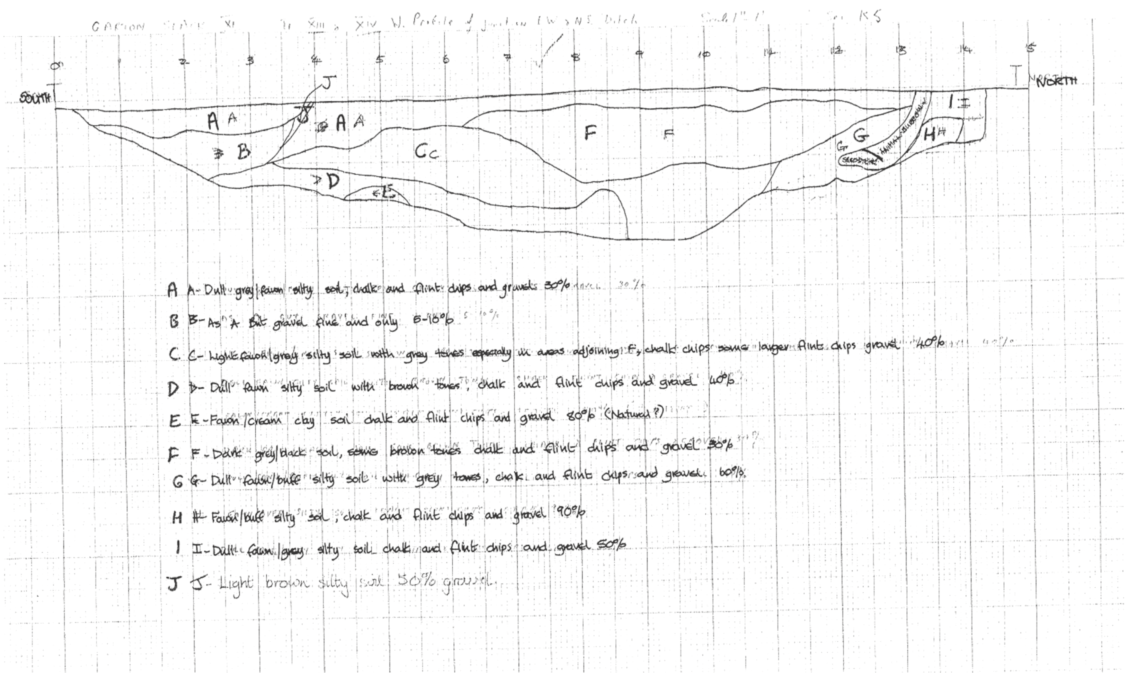


Fig 5.34 Section drawing showing the intersection of MD1 and NSD1
(Source: Section 11.85) Courtesy of the Wetwang/Garton Slack Project archive.

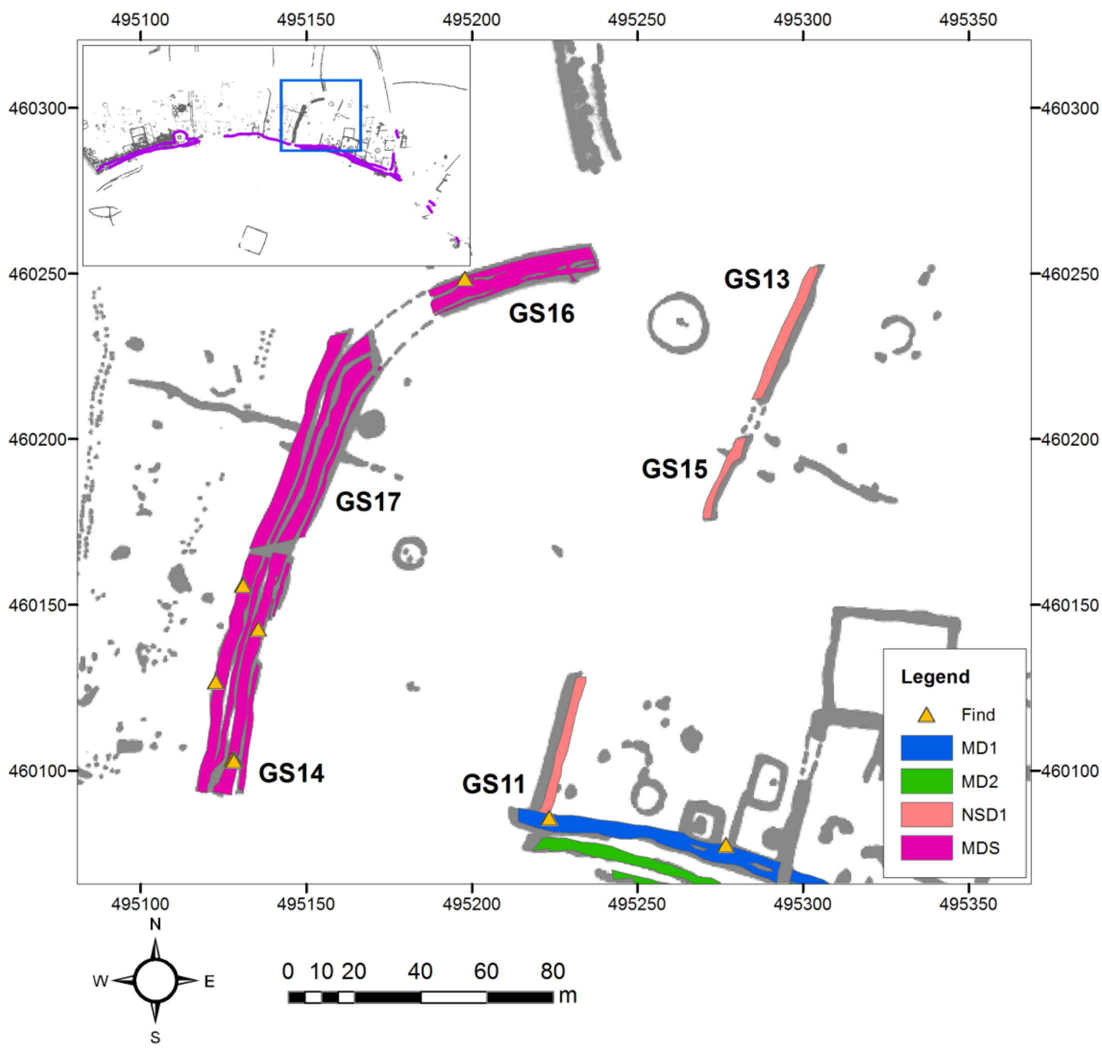


Fig 5.35 NSD1 (GS11/15/13) and the MDS (GS14/17/16)
Contains archival data. Courtesy of the Wetwang/Garton Slack Project archive.

5.3.1.8 GS15

NSD1 appears in GS15, but it was not excavated in this site. It is drawn on the site plan but is not discussed in the report text (Brewster 1980 [2010]: 364, Fig 315).

5.3.1.9 GS13

NSD1 continues in the western half of GS13. A small segment was excavated, but no section drawings survive in the Wetwang/Garton Slack Project archive. The ditch is not described in detail in Brewster's report; the inventory paragraph at the beginning of the GS13 chapter lists an Iron Age ditch (Brewster 1980 [2010]: 338) and the site plan (ibid.: Fig 278) labels the feature ‘Ditch 1’, but no further information is provided.

5.3.1.10 GS14

MD1 was excavated in GS14, where it crosses two perpendicular ditch systems, the MDS and NSD2, as well as two substantial post rows (Fig 5.36). The points of intersection between MD1 and its perpendicular boundaries offer clues as to the phasing of the site, although the evidence for the MDS is weaker than that for NSD2. The junction of the MDS and MD1 was outside of the excavated area, so Brewster’s interpretation (1980 [2010]: 358) was based on the surface stains of the two features. The junction of NSD2 and MD1, however, fell within the excavation grid and was sectioned.

NSD2 was stratigraphically lower than the deepest (re-)cut of MD1 (Fig 5.37). It had a V-shaped profile (Fig 5.38) and was similar in size to the main ditches. It has the potential to be a simple linear earthwork with one bank and ditch, but it could equally be another type of feature. The northernmost segment of NSD2 in GS23 appears to be roughly on the same alignment as an earthwork mapped by Mortimer (1905), but the majority of NSD2 seems to be a different feature. Mortimer’s earthwork seems to continue along a single alignment to the south of the Garton Slack settlement, up onto other side of valley, whereas NSD2 changes direction in GS23, turning slightly westwards until it arrives at MD1 in GS14. Alternatively, it could possibly be same as a possible droveway ditch mapped by Dent (nd) and Stoertz (1997) to the northwest of Mortimer’s earthwork, or a possible ladder settlement or field system located directly to the north (ibid.). Thus, NSD2 could potentially represent a linear earthwork, field boundary, droveway or single ditch that developed into a ladder enclosure. As its most likely classification and relationship to the various ditches to its north are, as yet, unresolved, NSD2 has not been included in any of the analyses presented in Chapter 4. Its presence highlights the complexity of the land division that occurred within Wetwang-Garton Slack, and the need for higher resolution dating evidence (i.e. scientific dates) to resolve issues of phasing.

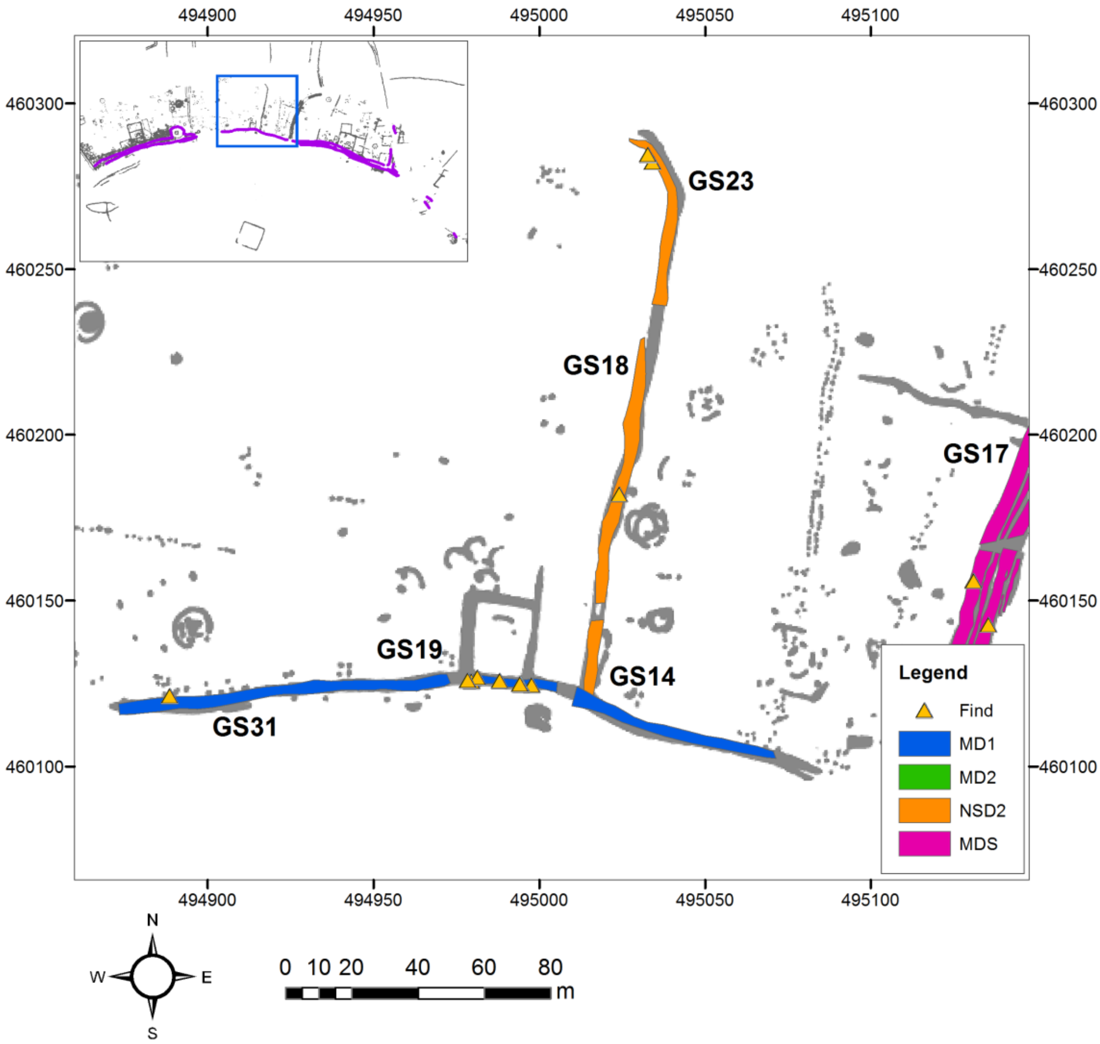


Fig 5.36 MD1, NSD2 and the MDS in GS14-31
Contains archival data. Courtesy of the Wetwang/Garton Slack Project archive.

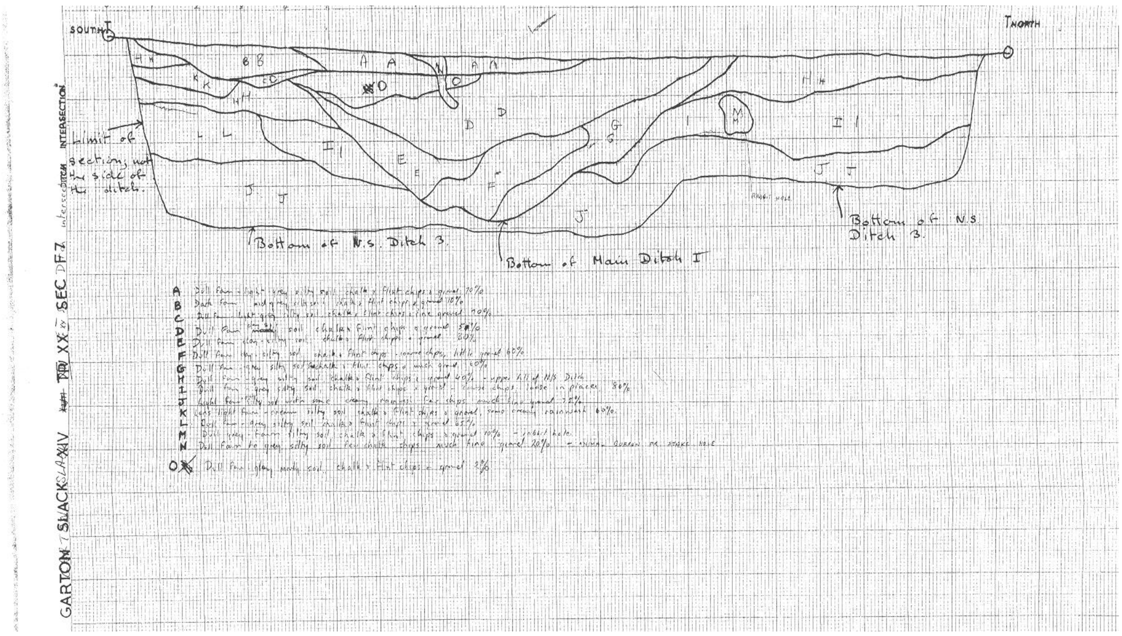


Fig 5.37 Intersection of NSD2 and MD1
(Source: Section 14.76) Courtesy of the Wetwang/Garton Slack Project archive.

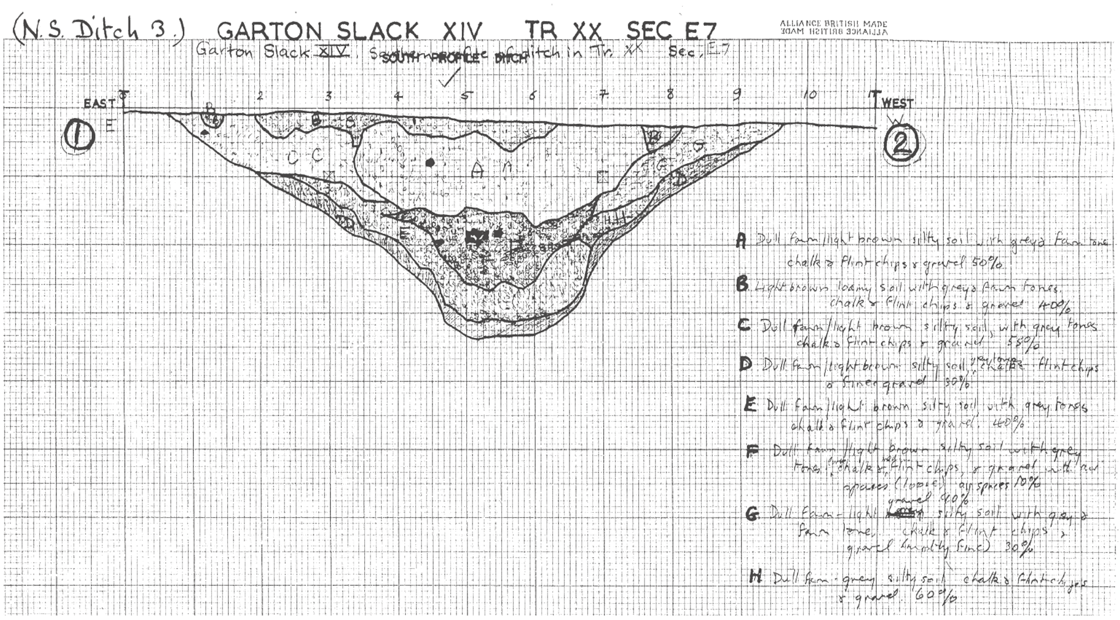


Fig 5.38 Section of NSD2
(Source: Section 14.93) Courtesy of the Wetwang/Garton Slack Project archive.

More convincing as a linear earthwork, but frustratingly difficult to relate to MD1-2, is the MDS (Fig 5.35). This feature consists of two large ditches, two presumed banks of equivalent size and two narrow ditch slots, which Brewster maintains would have cut across MD1, and possibly MD2 (1980 [2010]: 358). He states that the area where the MDS intersects with MD1 ‘was badly damaged by bulldozing’, but he is confident that the MDS post-dates the main ditches, even if only by a very short time (ibid.). If his assessment is correct, then linear earthworks of a traditional, closely spaced bank and ditch morphology—in contrast to the trackway-like main earthwork, made up of MD1-3 and the Central Berm—were still being built in Wetwang-Garton Slack well into the Late or Roman Iron Age, when MD1 had silted up and was undergoing modifications. If, however, the MDS is contemporary with the earlier phases of the trackway-like main earthwork, and did not overly MD1, then it would seem that earthworks of different morphologies coexisted at Wetwang-Garton Slack. These various types of earthworks would have been components of one larger, overarching system of land management, where all earthworks created boundaries and controlled movement, but only some of those earthworks directly facilitated that movement between their banks. The MDS roughly aligns with a series of linear cropmarks to the north of the excavation area (see Fig 5.35, inset; Stoertz 1997), which appear to form the western side of a 30m-wide corridor of parallel ditches. If these ditches were all in use at the same time, they may have served to channel people and animals down the hillside in a particular location (GS16). In its later phase, the MDS showed evidence of possible metalling in the form of compressed gravel (1980 [2010]: 39-40), and therefore may have taken on a trackway function; movement *on top of* the feature, rather than just around it, might have become possible. Complicating that hypothesis, though, is the presence of the small ditches to the east of each large MDS ditch. If movement had, during the MDS's later life, occurred between the large ditches, then the small ditches must not have impeded that movement. Brewster argues that these small ditches do not represent palisades as might be assumed (1980 [2010]: 358), favouring instead the interpretation that the small ditches represent the earliest phase of the monument, and that they were succeeded by the larger MDS ditches. However, there is no evidence to suggest that the small ditches are not later than or contemporary with the larger ones. If the pattern of embellishing large ditches with smaller ones is correct for MD1-2, then perhaps the same pattern explains the MDS. Modification of the MDS does seem to have taken place at some stage, and the large ditches may have been subject to re-cutting (Fig 5.39).

The MDS produced a wealth of finds, which is especially impressive when that fact is are compared with the general paucity of finds in the main ditches. Brewster (1980 [2010]: 358-359) proposes the possibility of a Late Iron Age rainwash layer (grid Sec F, Layer C and grid Sec A, Layer A; but see Fig 5.39 for stratigraphic confusion surrounding grid Sec F, Layer C), which he argues would have sealed the MDS Iron Age finds in the ditches. These finds include a bronze repoussé panel (Fig 5.40a), a bronze pin (Fig 5.40b), an iron nail (Fig 5.40c) and several sherds of Iron Age pottery (Fig 5.4d).

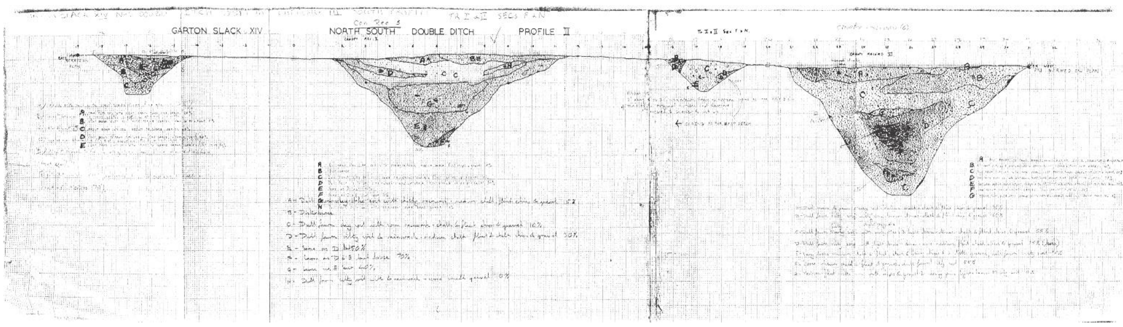


Fig 5.39 Section across the MDS
A possible re-cut may be evident in the eastern large ditch (centre left) between Layers E and G. The stratigraphy of the western large ditch (far right) appears to be confused, as Layer C encircles Layers F/D/E/G in a way that does not reflect normal site formation processes. This may be suggestive of a re-cut that has been misidentified, with the horizontal portion of Layer C actually belonging to a different context. (Source: Section 14.53) Courtesy of the Wetwang/Garton Slack Project archive.

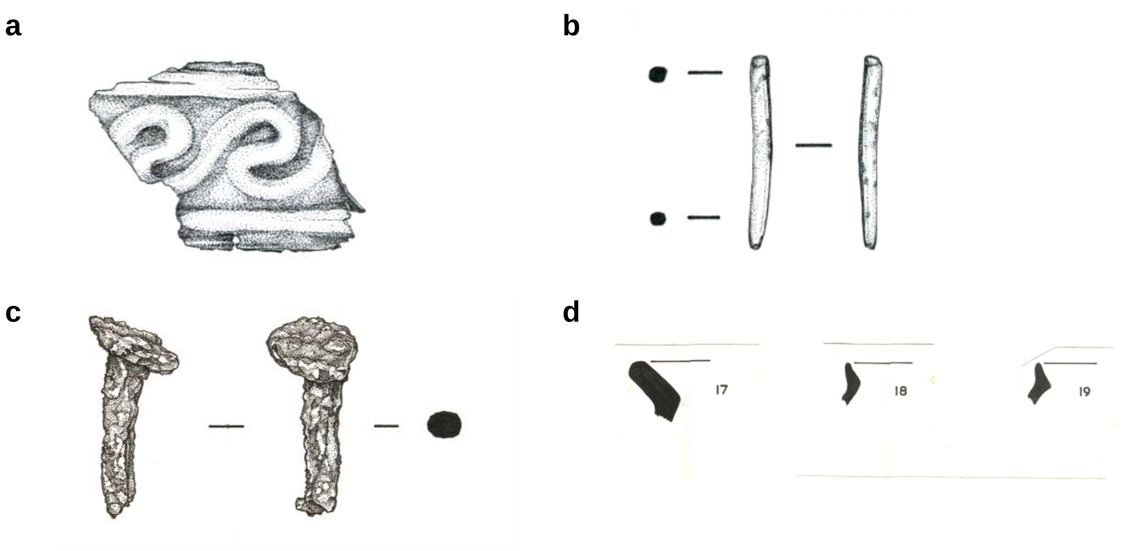


Fig 5.40 Finds from the MDS
a: Repoussé bronze panel, grid Sec F, Layer G (Source: Brewster 1980: Fig 313)
b: Bronze pin, grid Sed V2, Layer ?(3ft 9in) (Source: Brewster 1980: Fig 312:3)
c: Iron nail, grid Sec A, Layer A (Source: Brewster 1980: Fig 314:4)
d: Iron Age pottery, various layers (Source: Brewster 1980: Fig 307B:16-19)
Courtesy of the Wetwang/Garton Slack Project archive.

5.3.1.11 GS17

The MDS continues into GS17, where it begins to curve towards the east (Fig 5.35, 5.41). It maintains the same general morphology as in GS14, until the western large ditch splits away from the other ditches and continues heading north-east, whilst the others turn more sharply to the east. A well that was abandoned prior to being completed (called the 'Abortive Well' by Brewster (1980 [2010]: 370-371, Fig 326)) was found immediately to the east of the easternmonst MDS ditch, again perhaps suggesting a connection between earthworks and athropogenically-obtained water sources (see discussion of GS8 well in Section 5.3.1.6, above).

Fig 5.41 GS17 segment of the MDS
The 'Abortive Well' is located near to the point where the western large MDS ditch branches off from the other three ditches. (Source: Brewster 1980: Pl 88) Courtesy of the Wetwang/Garton Slack Project archive.

5.3.1.12 GS16

The eastern large ditch and two small ditches of the MDS continue in GS16, where they curve further towards the east and maintain the same approximate dimensions and shapes as in GS14 and GS17 (Fig 5.35, 5.42). This portion of the MDS was under threat of imminent from the quarry, so it was excavated quickly (Brewster 1980 [2010]: 366). The only dating evidence produced by the MDS ditches in this site was a sherd of Roman greyware pottery, located in the north-western small ditch (ibid.: 367).

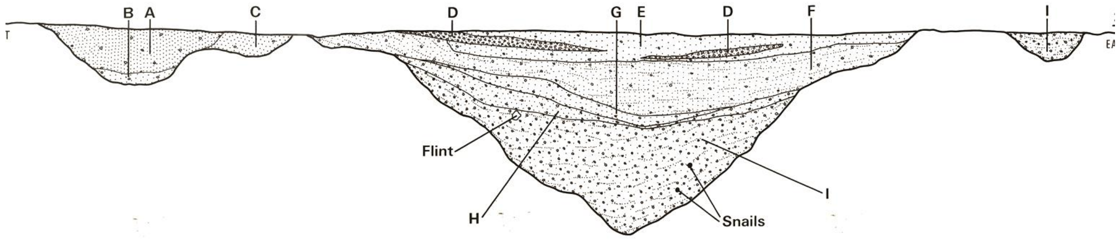


Fig 5.42 Section of the MDS in GS16
Courtesy of the Wetwang/Garton Slack Project archive.

5.3.1.13 GS18

In GS18, NSD2 continued from its location in the western part of GS14 (Fig 5.36, 5.43). It maintained its deep, V-shaped profile (Fig 5.44). Two post rows or palisades were located between the MDS and NSD2 (Fig 5.63); in GS18, the western post row runs perpendicular to NSD2.

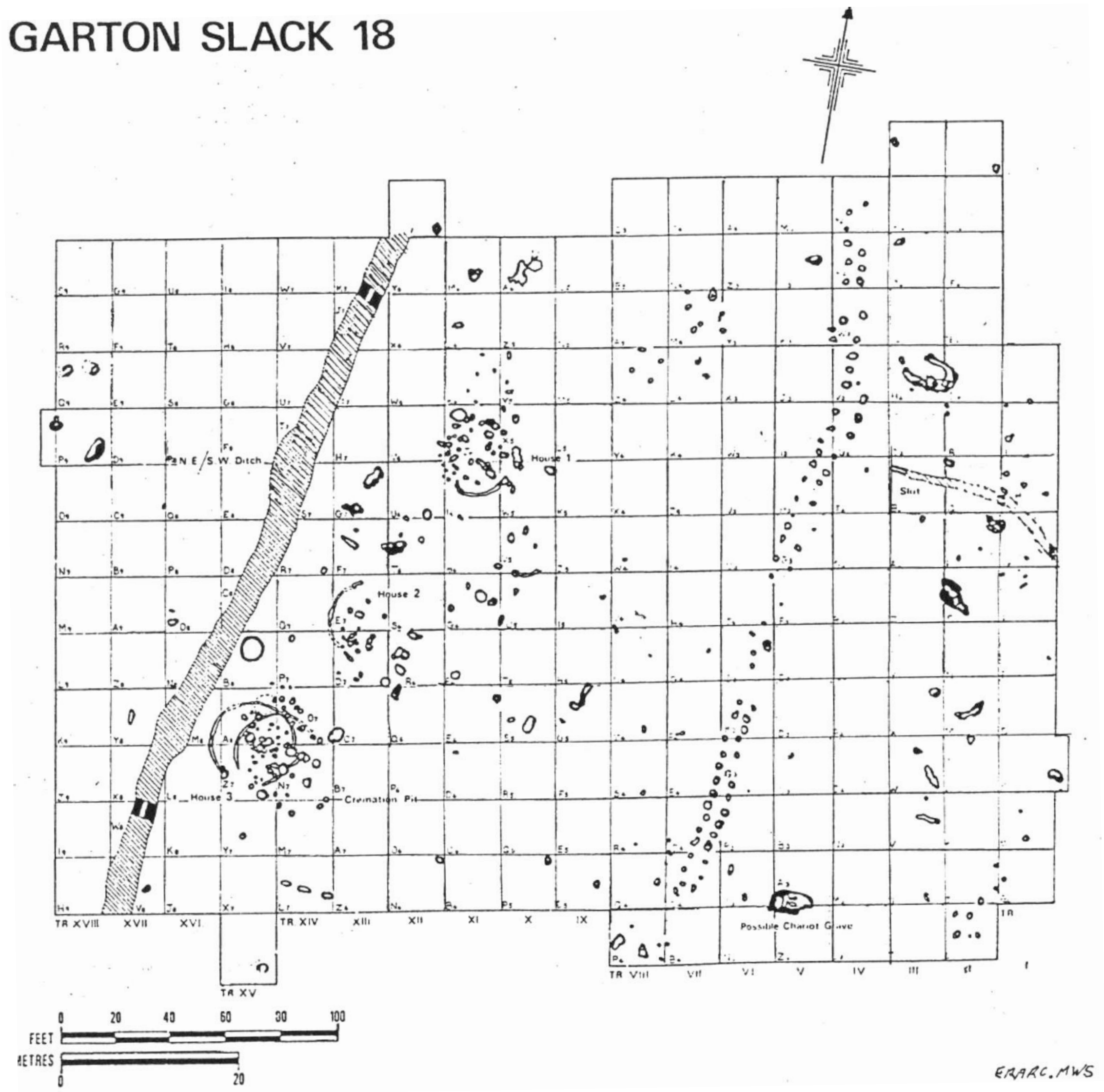


Fig 5.43 NSD2 and parallel post row, GS18
(Source: Brewster 1980: Fig 334) Courtesy of the Wetwang/Garton Slack Project archive.

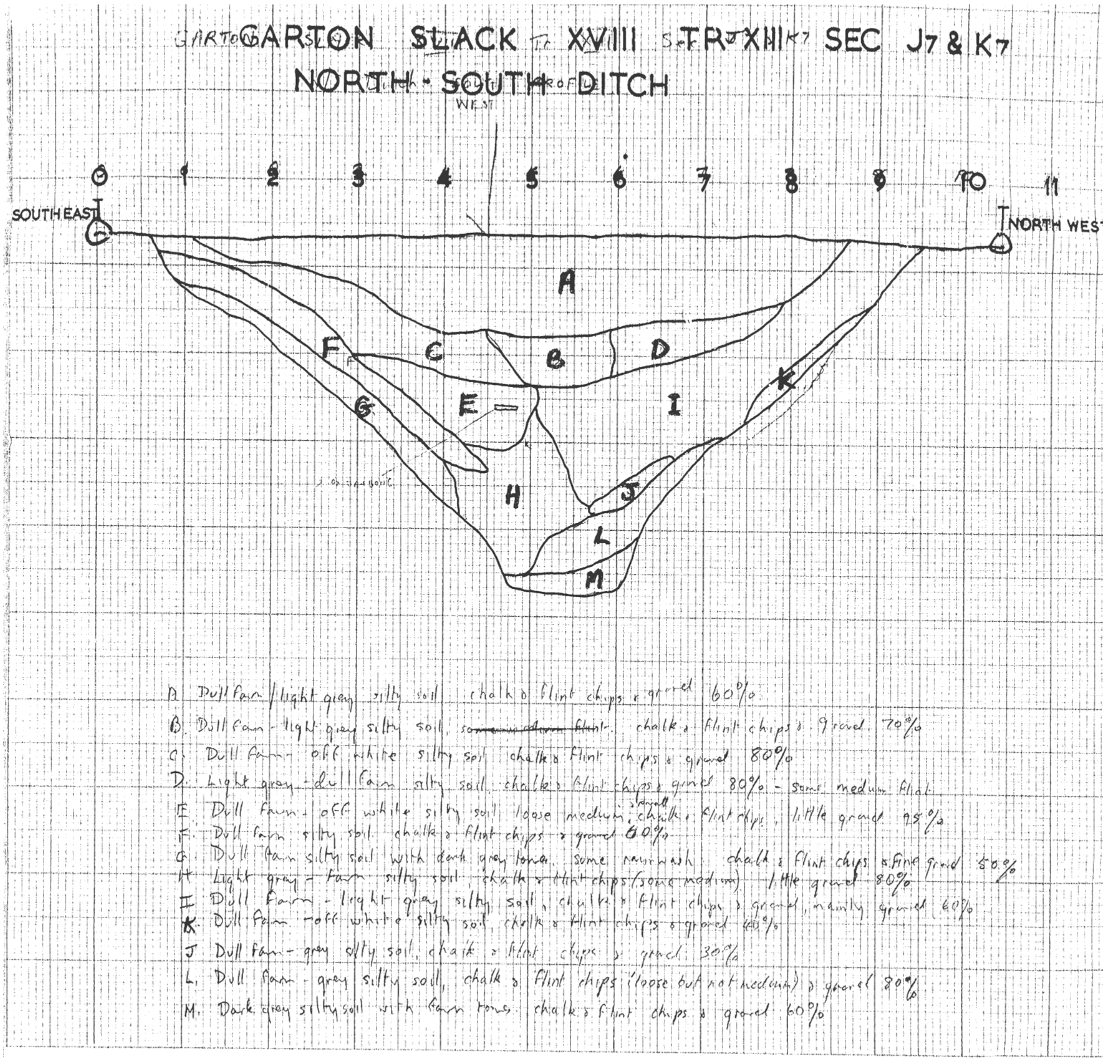


Fig 5.44 Section drawing of NSD2 in GS18
(Source: Section 18.132) Courtesy of the Wetwang/Garton Slack Project archive.

5.3.1.14 GS23

In GS23, NSD2 turned towards the north-west (Fig 5.36, 5.45). Its northern portion was badly eroded (compare Fig 5.46a with 5.46b), and attempting to determine how far it originally extended beyond the excavation area is hampered by the fact that its alignment becomes difficult to trace (see GS14, above).

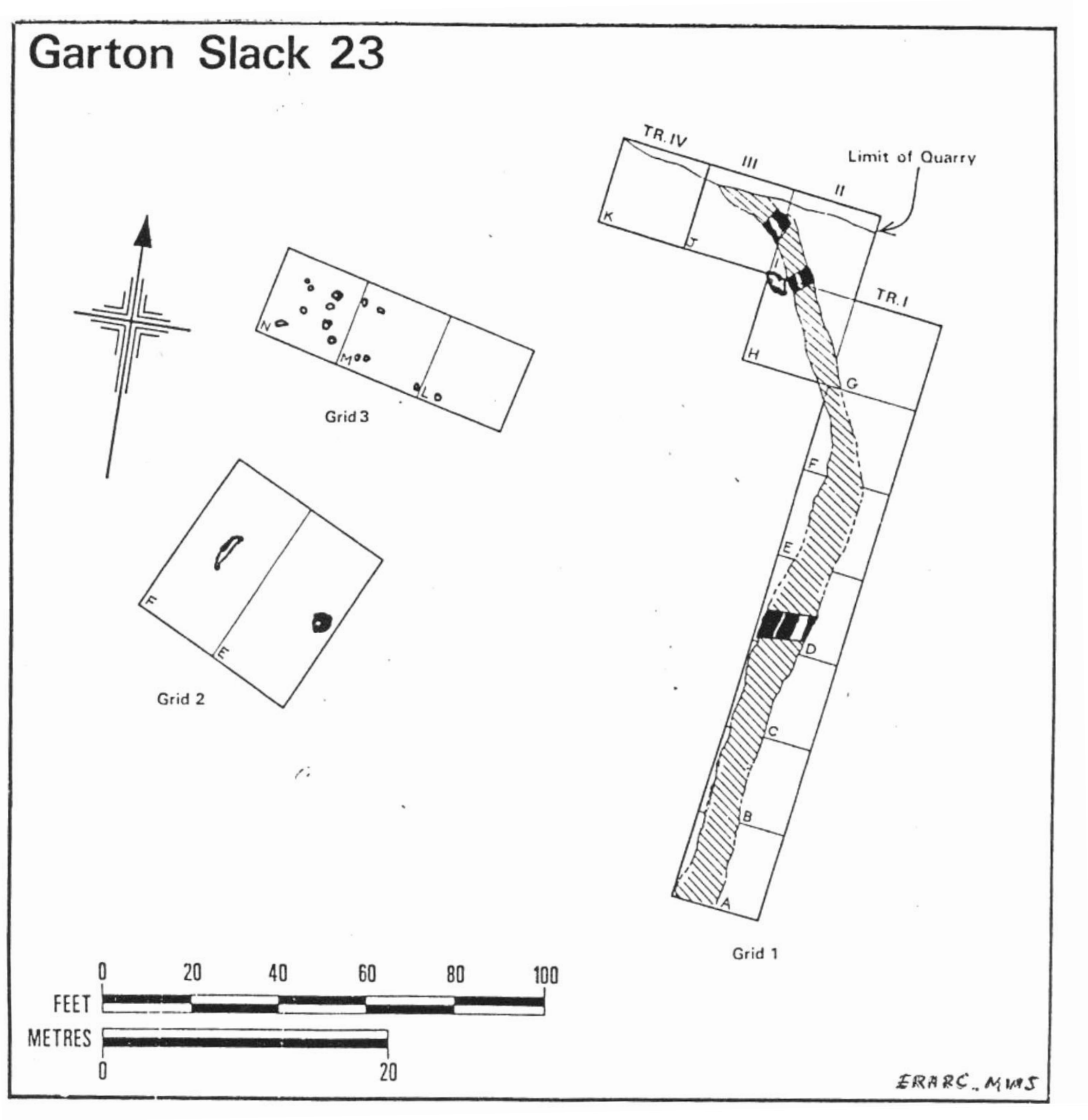
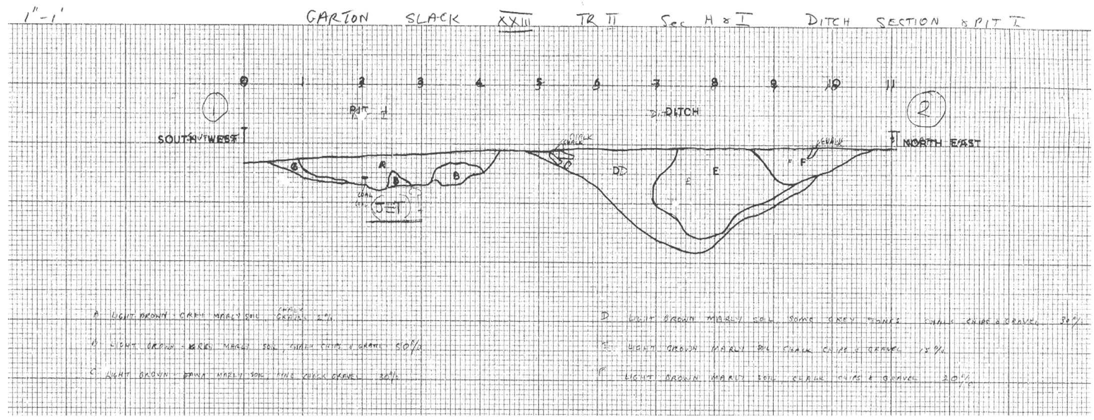


Fig 5.45 Plan of GS23
(Source: Brewster 1980: Fig 368) Courtesy of the Wetwang/Garton Slack Project archive.

a



b

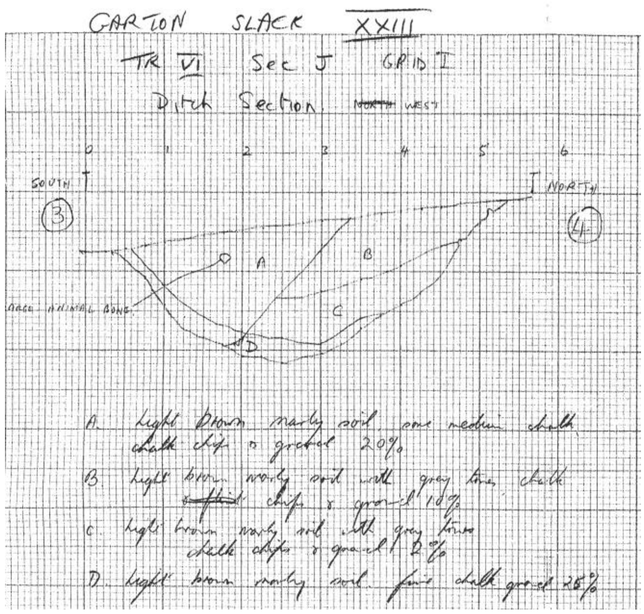


Fig 5.46 Sections of NSD2
a: NSD2 and adjacent pit
b: Eroded northern portion of NSD2
(Source: Sections 23.13 and 23.12) Courtesy of the Wetwang/Garton Slack Project archive.

5.3.1.15 GS19

MD1 appears at the southern edge of GS19, where it has been modified by a later rectilinear enclosure (Fig 5.36). This major re-cut can be seen in the section drawings of MD1 (Fig 5.47-49, moving from east to west). The re-cut contained two burials, including one of an infant, and finds such as an iron knife (Fig 5.50). A bronze ring (Fig 5.51) was found in the upper fill of MD1 (grid Sec V4) at the western edge of the enclosure.

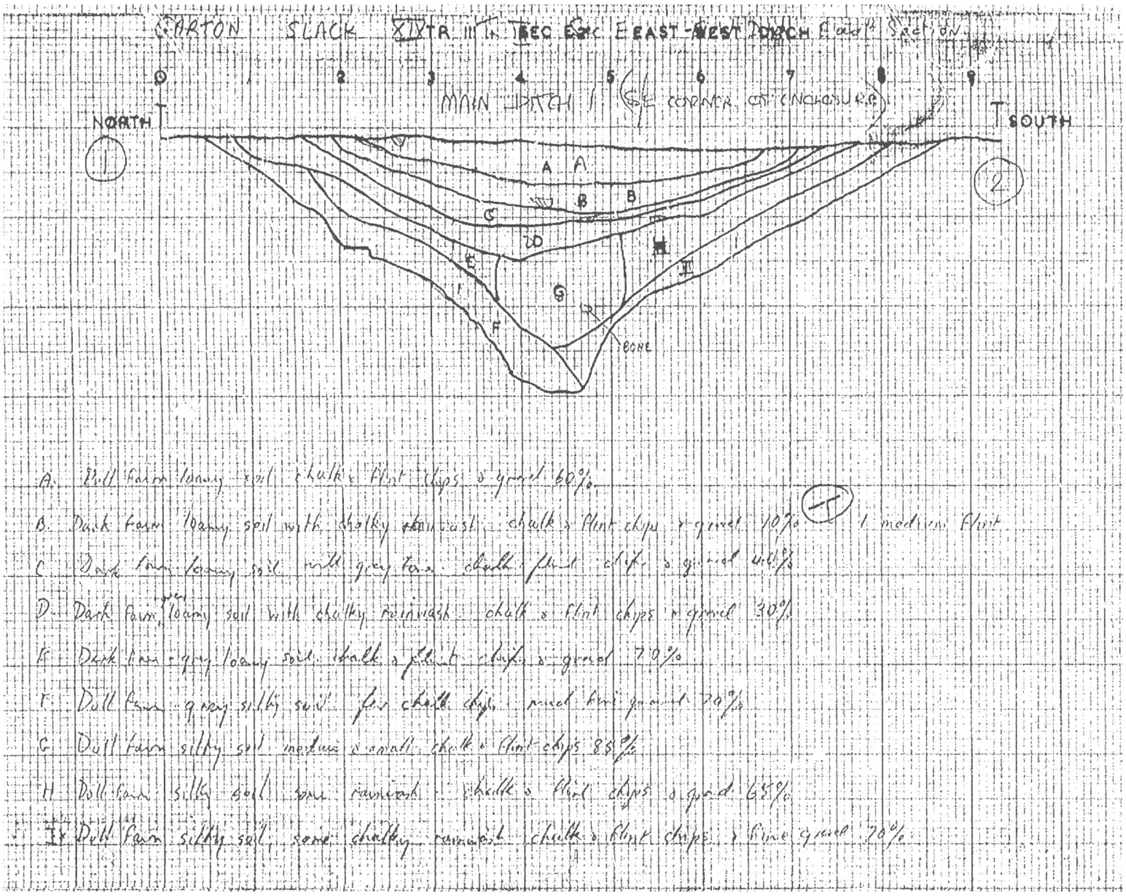


Fig 5.47 MD1 to the east of its re-cut by the GS19 rectilinear enclosure
Grid Section E2 (Source: 19.8/19.11 (duplicate)) Courtesy of the Wetwang/Garton Slack Project archive.

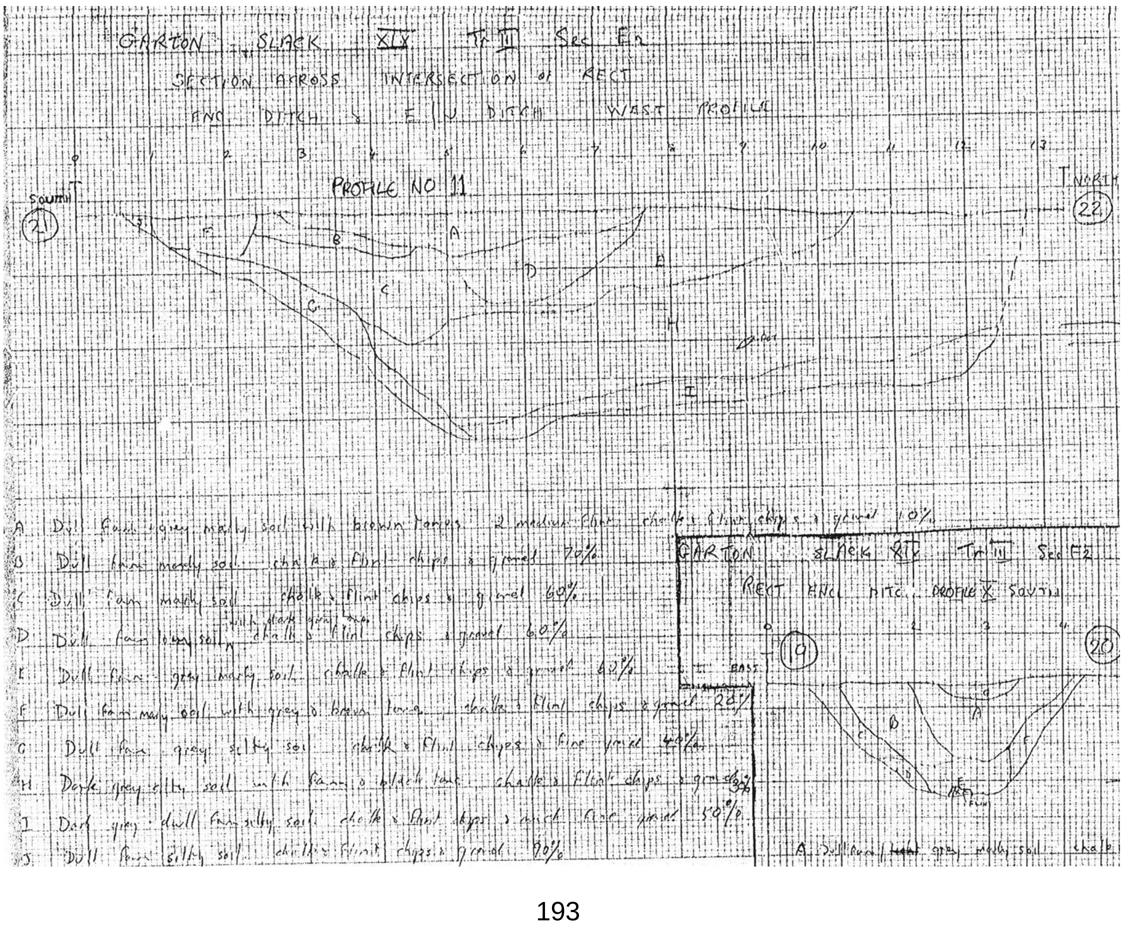
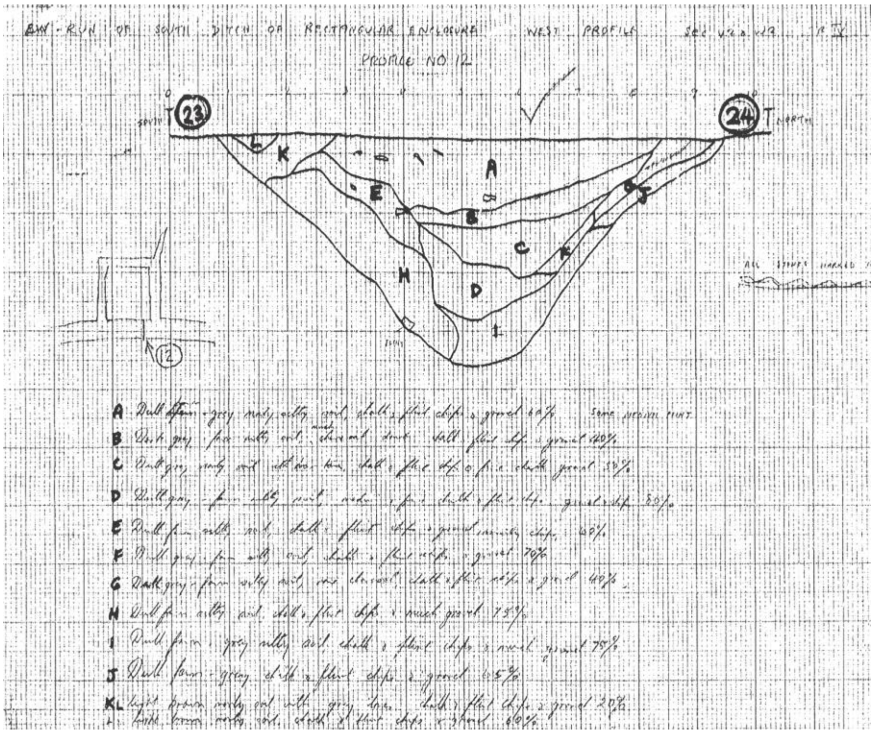
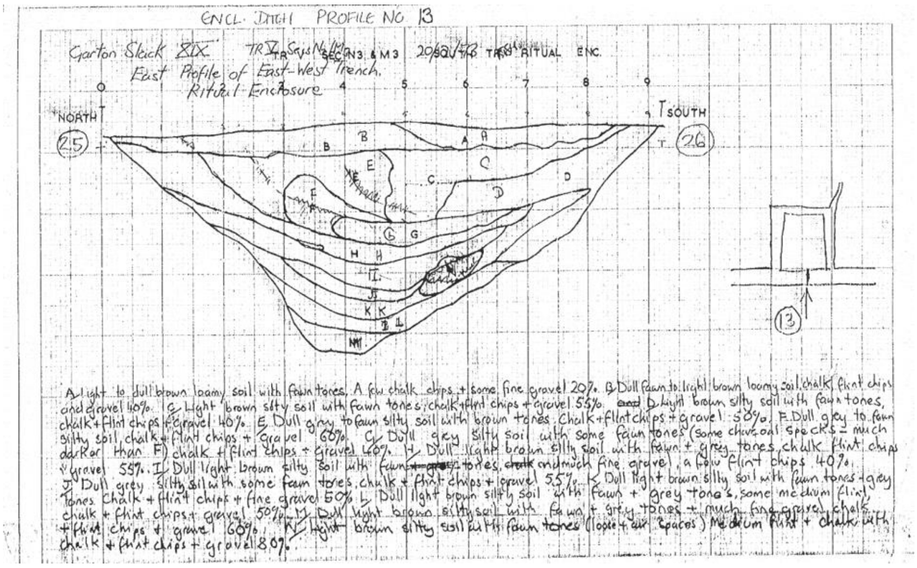


Fig 5.48 Intersection of MD1 and the GS19 rectilinear enclosure
Grid Section E2 (Source: 19.16) Courtesy of the Wetwang/Garton Slack Project archive.

a



b



c

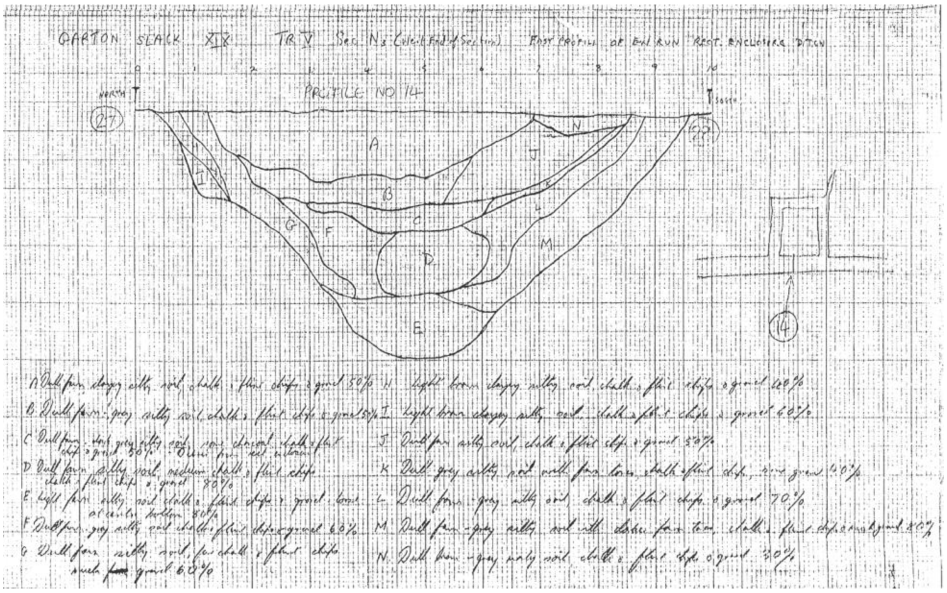


Fig 5.49 Re-cutting of MD1 by the GS19 rectilinear enclosure, moving from east to west
a Grid Sections V2 and W2
b Grid Sections N3 and M3
c Grid Section N3
(Source: Sections 19.14/19.15, 19.10/19.13 and 19.9/19.12 (all have duplicates)) Courtesy of the Wetwang/Garton Slack Project archive.

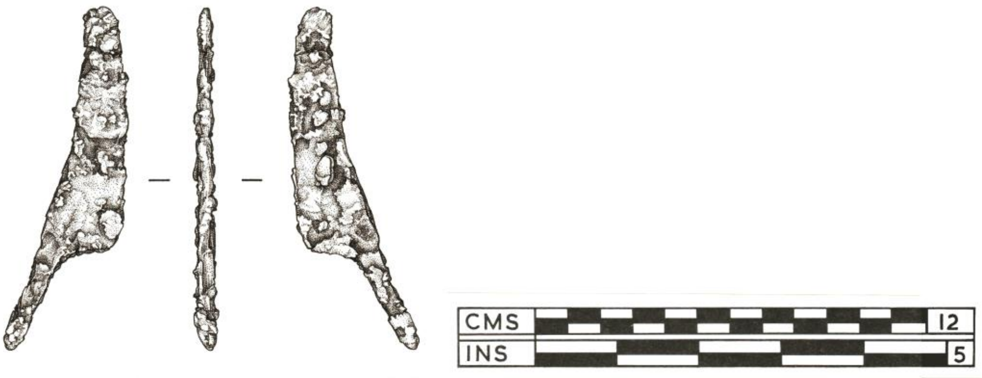


Fig 5.50 Iron Age iron knife from southern ditch of rectilinear enclosure (re-cut of MD1)
Grid Section V2, Layer C. (Source: Brewster 1980: Fig 362:1) Courtesy of the Wetwang/Garton Slack Project archive.

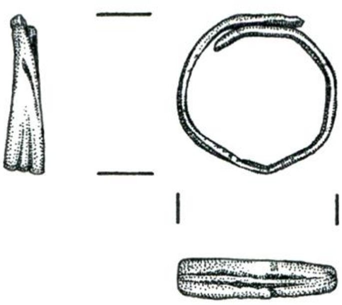


Fig 5.51 Bronze ring from MD1
Grid Section V4, upper fill. (Source: Brewster 1980: Fig 363:2) Courtesy of the Wetwang/Garton Slack Project archive.

5.3.1.16 GS31

The westernmost site from Brewster's excavations to show definitive evidence for the main ditches is GS31 (Fig 5.36, 5.52). This site followed MD1 westwards from GS19, tracing it past the remains of two hollows that may represent dew ponds—Brewster could not date them, but proposes that they might be medieval (1980 [2010]: 455). MD1 was found to have disturbed a Food Vessel grave, which contained an inhumation, a cremation and a bronze awl (ibid.: 455-456). This may be evidence for MD1 obliterating an earlier round barrow, or the burial might not have had a monument by the time that the earthwork was constructed.

5.3.1.17 WS5

In WS5, Brewster believed that he found the continuation of MD1 to the north of a chariot-type grave (Fig 5.52-53). However, this ditch does not fit correctly between with the long stretches of MD1 that run from GS31 eastwards and WS6a westwards, which do appear to align. If MD1 were to continue along the course that was set for it in GS31, it should have remained to the south of the railway embankment; WS5 is too far north for this. Indeed, Dent's plan of the entire excavated area (background image for Fig 5.52), including all of the WS and GS sites, does not show a ditch to the north of the WS5 barrow, and thus this segment can be discounted.

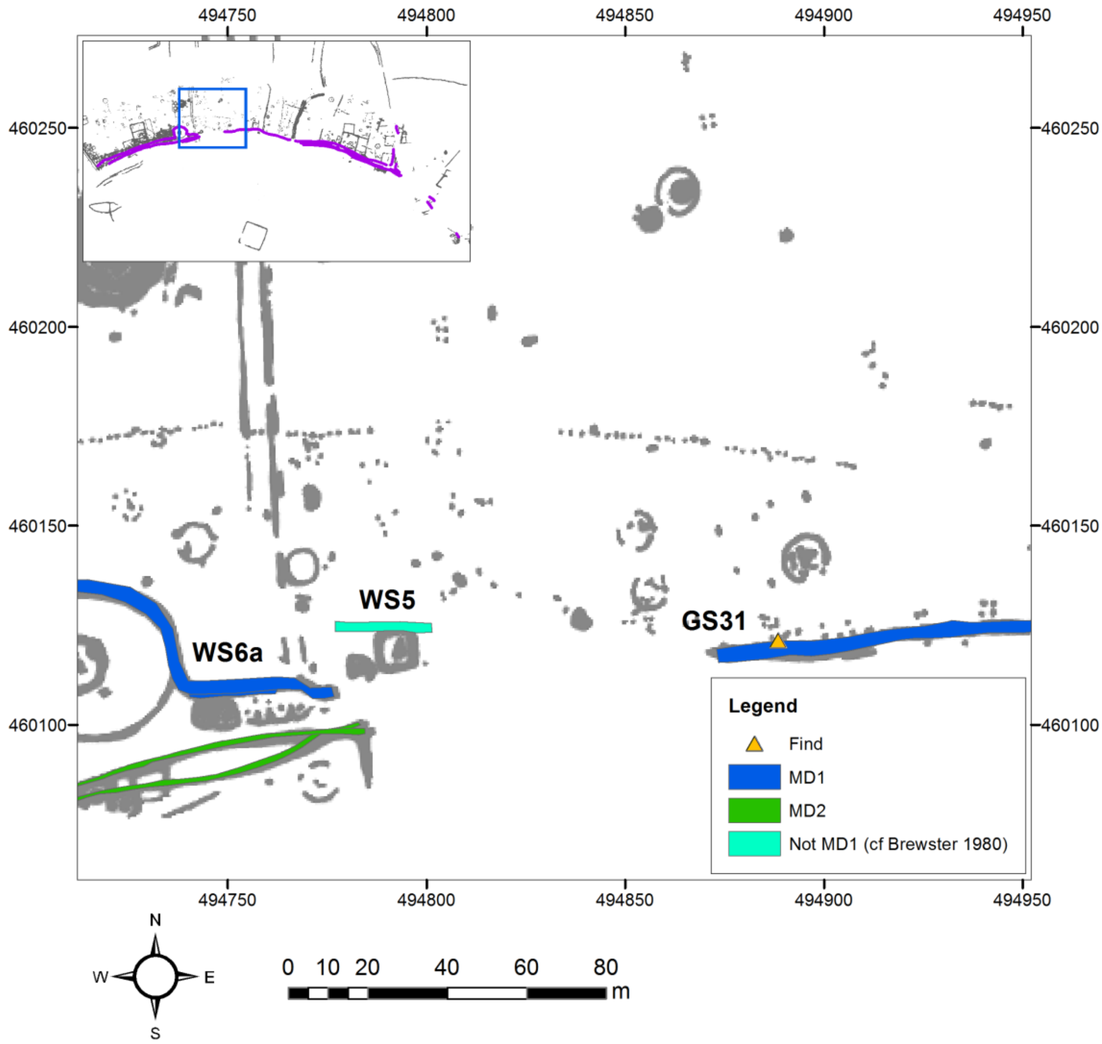


Fig 5.52 Main ditches around WS5
Contains archival data. Courtesy of the Wetwang/Garton Slack Project archive.

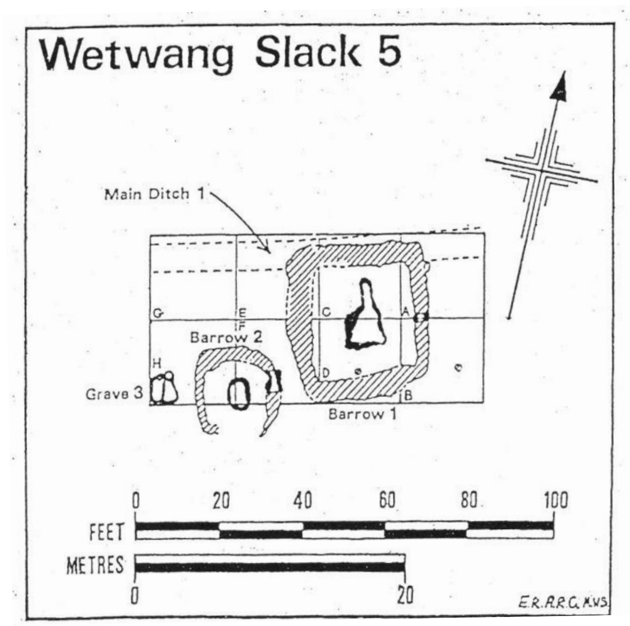


Fig 5.53 Plan of WS5
Barrow 1, containing the 'Sinful Couple' double burial plus foetus, appears to cut an E-W ditch, which Brewster took to be MD1. (Source: Brewster 1980: Fig 498) Courtesy of the Wetwang/Garton Slack Project archive.

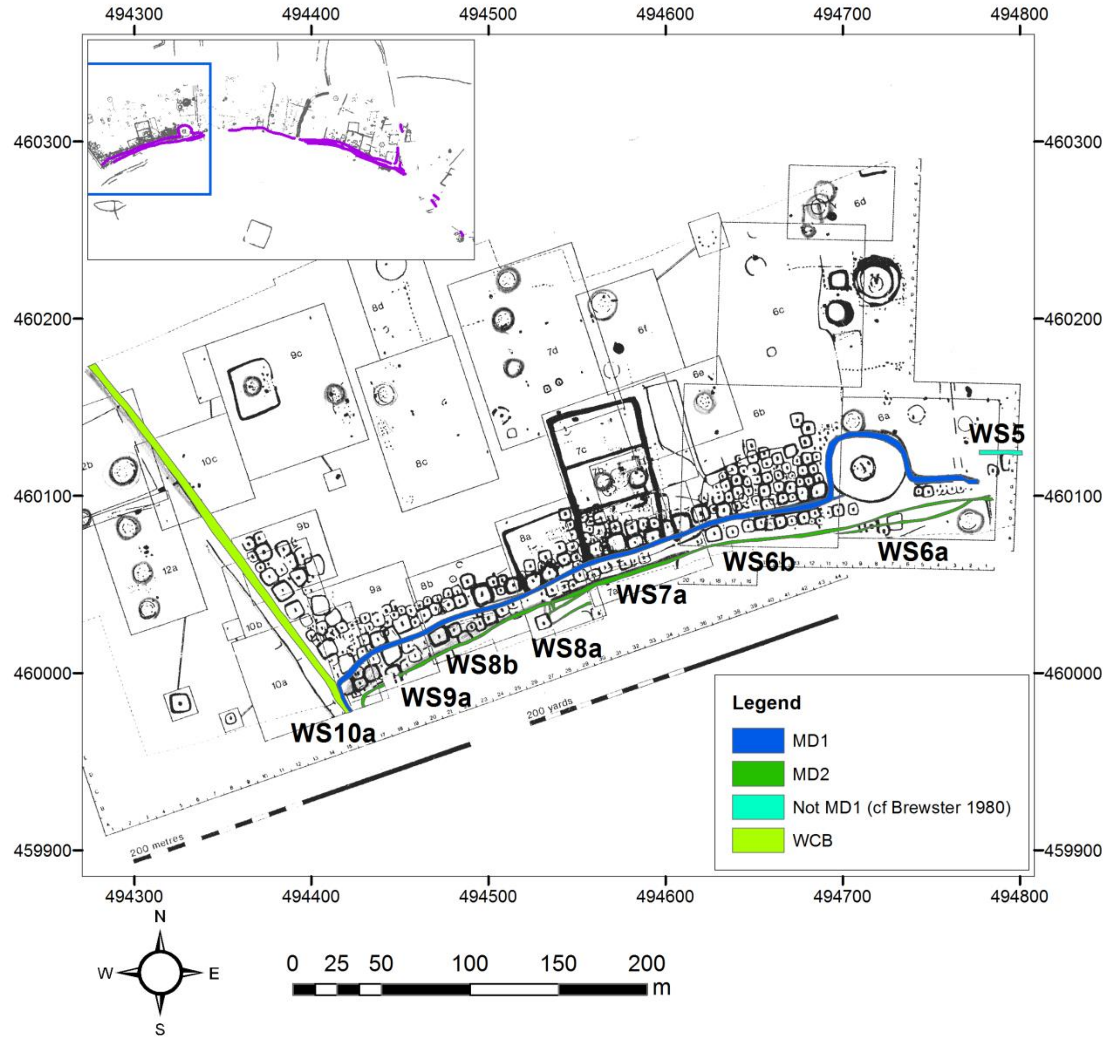


Fig 5.54 Wetwang Slack earthworks in relation to Dent's site numbers
Contains archival data. Courtesy of the Wetwang/Garton Slack Project archive.

5.3.1.18 WS6a-b

MD1 and MD2 reappear in WS6a, after disappearing in GS31 (Fig 5.54). Both ditches exhibit multiple re-cuts and re-alignments; Dent's phasing (Figs 5.55-5.57; see also Figs 5.9) proposes three main phases of ditch cutting in the Wetwang cemetery. Phase 1 is represented by the fragmentary Ditches D=MD2, E=MD2 and F=MD2 (Figs 5.55), and Phase 2 saw the re-cutting of these ditches by Ditch A=MD1 and B=MD2. In WS6a and WS6b, Ditch F abutted the edges of an Early Bronze Age round barrow (Fig 5.55 and 5.58). Its Phase 2 re-cut, Ditch A, was re-routed around northern side of the barrow, virtually encircling it (Fig 5.56; see also Sections 5.2.2 and 5.3.1.19). This may have served to strengthen the symbolic connection between the earthwork and the barrow, drawing it and some square barrows into the boundary of the trackway and out of the Middle Iron Age cemetery. The shape of this new ditch that elaborated the barrow echoes the multiple phases of curved ditches at Huggate Dykes, which seem to reference an entrance or an earlier, albeit archaeologically invisible, feature (see Chapter 6). The impact that the Phase 2 re-cutting of MD1—and the related restoration of the road, which is thought to be contemporary—would have had on the square barrows between the ditches (Fig 5.56 and 5.58) is best understood when WS6a and WS6b are considered in combination with WS7a and WS8a, where metalling and wheel ruts were discovered.

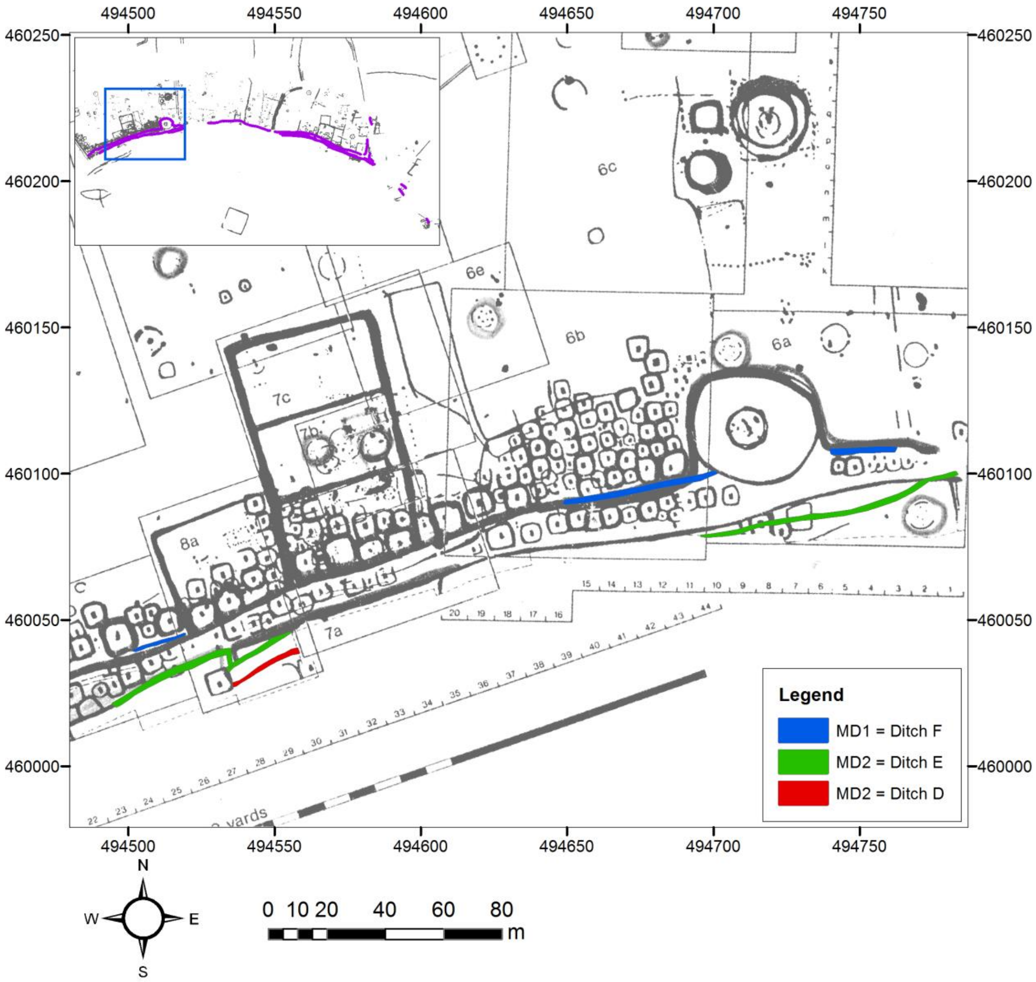


Fig 5.55 WS Phase 1: Ditches D/E/F
After Dent and Giles (see Fig 5.9). Contains archival data. Courtesy of the Wetwang/Garton Slack Project archive.

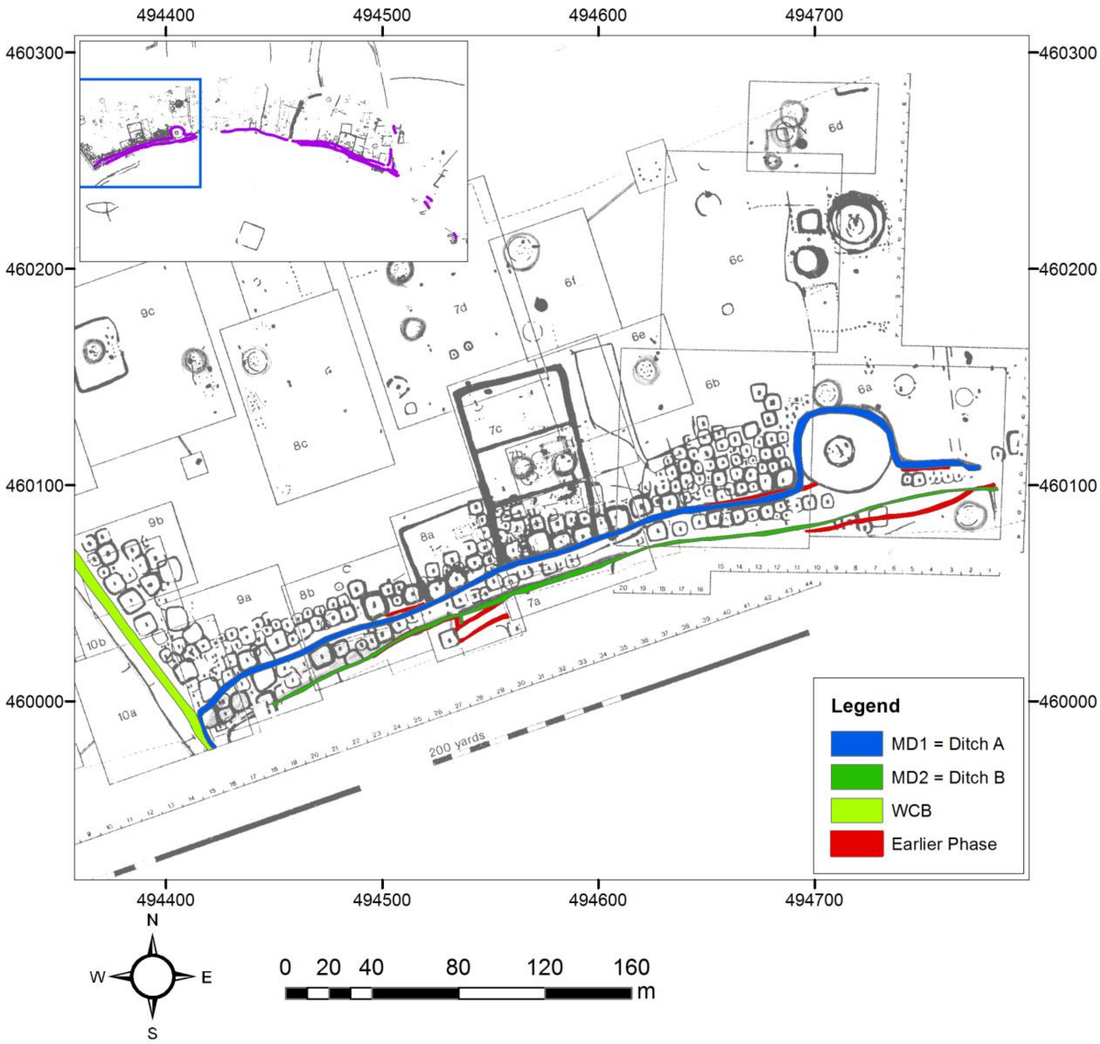


Fig 5.56 WS Phase 2: Ditches A/B and the WCB
After Dent and Giles (see Fig 5.9). Contains archival data. Courtesy of the Wetwang/Garton Slack Project archive.

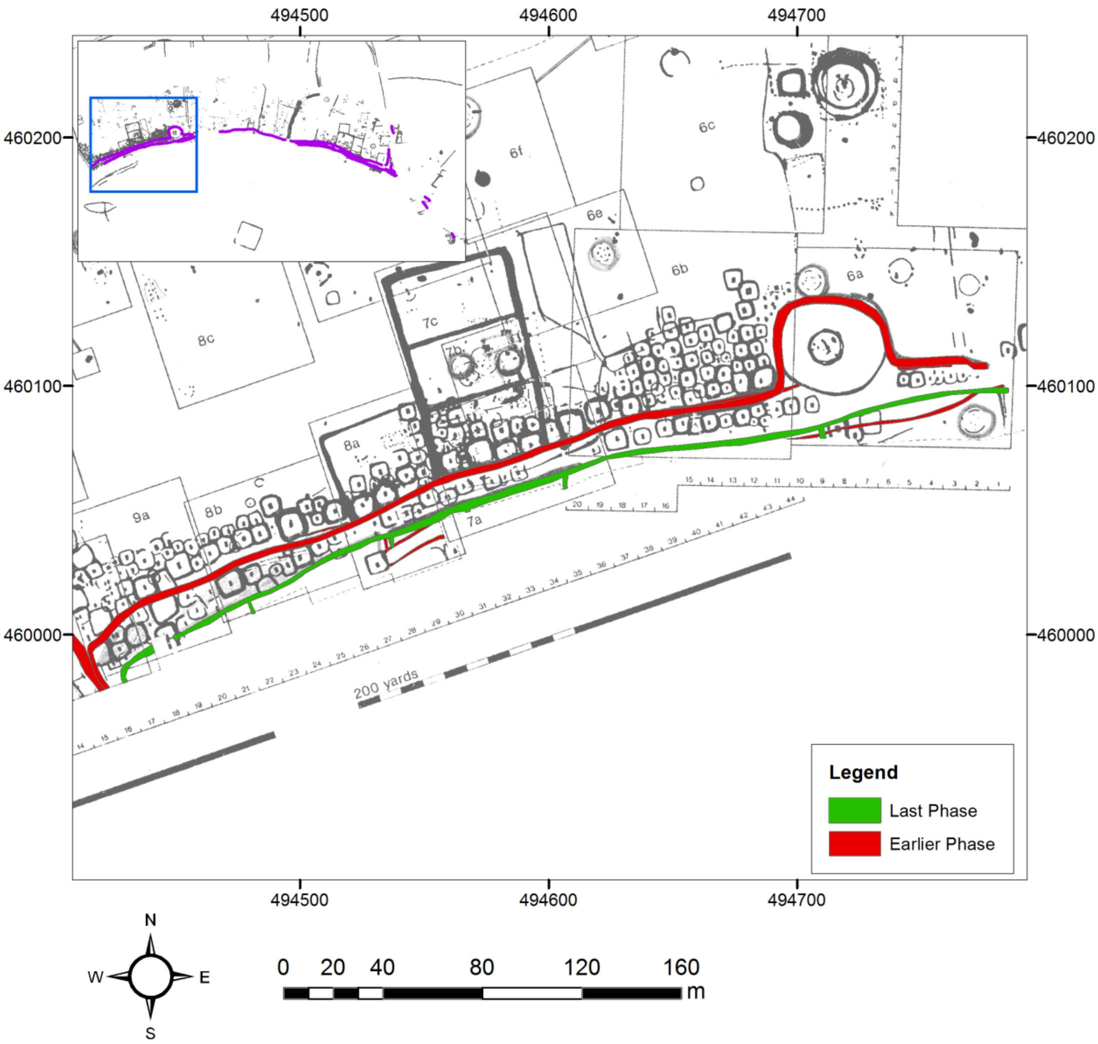


Fig 5.57 WS Phase 3: Subdivision of land to south of MD2
Phase 3 comprises the westernmost segment of MD2—which turns to the south in WS10a and leaves a narrow (6m) gap between itself and the WCB—plus a series of smaller partitions running at right angles from southern side of MD2. These perpendicular ditches maintain the boundary created by Phase 2's Ditch B=MD2 and might offer a parallel for the palisade that cuts across MD2 in GS6. After Dent and Giles (see Fig 5.9). Contains archival data. Courtesy of the Wetwang/Garton Slack Project archive.

Fig 5.58 Elaboration of a round barrow in WS6a and WS6b
Contains archival data. Courtesy of the Wetwang/Garton Slack Project archive.

5.3.1.19 WS7a

WS7a contained evidence of road metalling and wheel ruts, the latter of which continued into WS8a (Fig 5.59). The dimensions of the road metalling context (WE189) are unclear, but WS8a contained a well-preserved stretch of metalling (WT264) that measured 22m long, 4m wide and 11cm deep, so it reasonable to assume that the metalling in WS7a would have originally been of a similar character (context codes in Section 5.3.1.19 onwards are taken from the archival copy of Dent's context register, which is organised as a Microsoft Access database and curated by the University of Bradford). It is difficult to say exactly when the Wetwang-Garton Slack main earthwork was first used for the movement of vehicles, as earlier road surfaces would have become eroded, and the artefacts found in the surviving surfaces and wheel ruts date the silting of these features, rather than their construction. Elsewhere in Wetwang Slack, Dent discovered Roman tiles (WS8a, WS10 and WS12) and a bronze moulded terminal (WS10) within wheel ruts and road surfaces (nd; see also Appendix B). The metalled surfaces and wheel ruts date to Phase 2 (Fig 5.56) and/or Phase 3 (Fig 5.57), after the square barrows between MD1 and MD2 had been flattened, although this may not have been the first time that the road received vehicular traffic. If the Central Berm had been metalled with chalk when it was first constructed, or even just stripped of turf and levelled, then a road surface suitable for vehicles could have existed in Phase 1 (see Section 5.2.2.4). The use of at least some linear earthworks as roads from their initial construction onwards is suggested by their coincidence with trackways, as at Huggate Dykes (see Chapter 6), and the morphology of the Central Berm in WS6a-9a, which is likely to have been established in Phase 1, is consistent with that of a road.

Giles (2000: 196-198) interprets the presence of wheel ruts and a road surface which was obviously in use on top of square barrows as deliberate defacing and forgetting of the dead. However, as argued in Section 5.2.2, the decision to re-establish the earthwork's road surface over these square barrows need not be indicative of malicious or negative feelings towards the dead within those barrows. Indeed, the act of encircling the Early Bronze Age round barrow in WS6a-b (Section 5.3.1.18) and drawing it into the boundary of the road suggests that the people of Wetwang-Garton Slack were making a deliberate attempt to *appropriate* and *incorporate* the ancient dead, or whatever they believed the round barrow to represent, into the earthwork during Phase 2. Together with the ancient dead of the round barrow, the more recent dead in the square barrows between main ditches may have been given a special status by becoming part of the road, and they may have been thought to exercise agency in the journeys of the living.

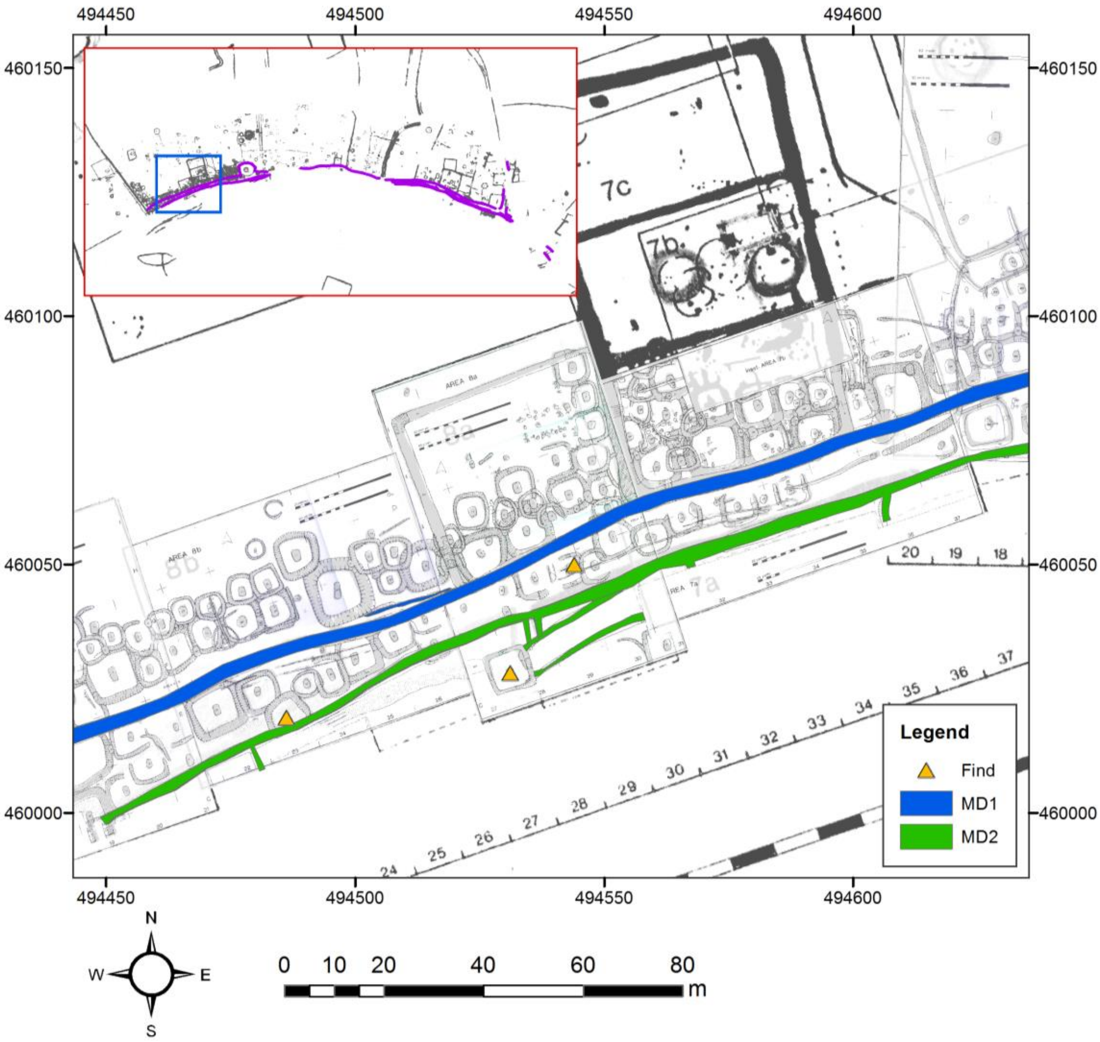


Fig 5.59 Plan of earthwork in WS7a, WS8a and WS8b, showing wheel ruts on the Central Berm
Contains archival data. Courtesy of the Wetwang/Garton Slack Project archive.

5.3.1.20 WS8a-b

In WS8a and WS8b, the main earthwork continued along the valley bottom, with well-preserved metalling (WT264, measuring 22m long, 4m wide and 11cm deep) and wheel ruts (WT035 and WT057) on the Central Berm (Fig 5.59). Two ditches (D and E) which appear to represent the earliest phase of MD2 (Phase 1; Fig 5.55) were located to the south of the main alignment of the earthwork. Smaller, perpendicular Phase 3 ditches subdivide the land to the south of Ditch B=MD2, although the extent of enclosure is unclear due to the ditches' location at the southernmost edge of the excavation. These perpendicular ditches might offer a possible parallel for the slot or palisade from GS6 (Section 5.3.1.3), as well as many of the other smaller ditches and slots found across Garton Slack, which seem to relate to Later Iron Age re-cutting and modification of the main earthwork. The perpendicular subdivisions in Wetwang Slack support Dent's (1984) hypothesis that the cemetery was used for farming after the square barrows had gone out of use. If these ditches served a similar purpose to the Late Iron Age rectilinear enclosures and slot trenches to the north of MD1 in Garton Slack, then it is possible that the final phase of the settlement—with agricultural activities potentially occurring within some or all of the enclosures—was as substantial to the south of the main earthwork as it was to the north. This proposal is explored in Section 5.4.

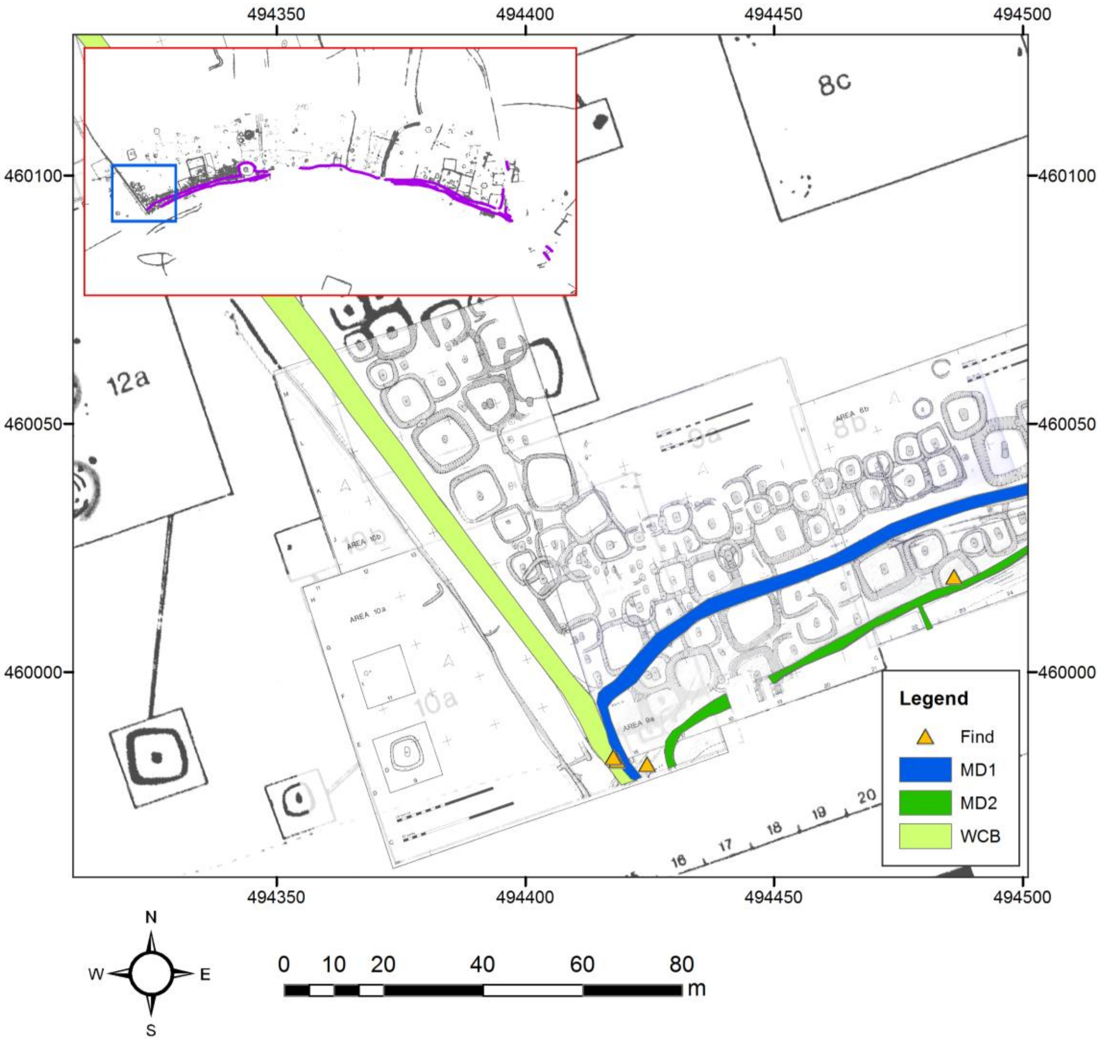


Fig 5.60 WS9a, WS10a and WS10b
Contains archival data. Courtesy of the Wetwang/Garton Slack Project archive.

5.3.1.21 WS9a

Ditch A=MD1 and Ditch B=MD2 are both present in WS9a. The metalling on the Central Berm from WS7a-8b continues in WS9a (WW210; Fig 5.60), albeit in a poorer state of preservation. Here Dent observed a fragmentary road surface composed of flints, some of which were brightly coloured, but according to the entry in the site's context register, he found it difficult to relate the metalling to the main ditches.

5.3.1.22 WS10a-10c

In WS10a, Ditch A=MD1 and Ditch B=MD2 encounter the WCB (WW036; Fig 5.60-5.61), and according to Dent's phasing, both main ditches seem to turn sharply to the south (Fig 5.56-5.57). Ditch A=MD1 appears to have been incorporated into the eastern side of the WCB, potentially channelling movement onto the Central Berm through a gap in Ditch B=MD2. Along the Central Berm in this area, flint metalling (WA063) measuring 25m in length was discovered overlying a natural gravel surface, and two short wheel ruts (WA041 and WA042) located 1.6-1.7m apart were found running in a NE-SW direction, ending at the south-easternmost edge of the WCB. The westernmost portion of Ditch B=MD2 (which has a small, unexcavated gap between WS10a and WS9a) has been cautiously phased as Phase 3 (Fig 5.57), but it could easily be part of Phase 2, with its south-turning section either original or added in Phase 3 (at the same time as the other perpendicular ditches to the south of Ditch B=MD2). The WCB, which measures 3.7m wide and 1.5m deep in this area, bounds the western edge of the densely-packed square barrow cemetery, although sparse square barrows do occur to the west of the WCB. The 1984 chariot burials were excavated further to the west in the slack, and the 2001 chariot burial was found upslope in Wetwang Village, suggesting that funerary activity was not entirely restricted by the WCB.

5.3.1.23 WS12b

The WCB continues in the north-east corner of WS12b (WG257; Fig 5.61), where it is 3.80m wide and more than 1.50m deep. It carries on to the north-west outside of the excavated area.

Fig 5.61 WS10c and WS12b
Contains archival data. Courtesy of the Wetwang/Garton Slack Project archive.

5.3.2 Site biography: change over time

Drawing together the evidence presented above, it is possible to write a life history of the Wetwang-Garton Slack earthworks (Table 5.1). This biography is broken down into stages of life, providing a metaphor to help bridge the gap between the stories of people and those of sites. By recognising that the life histories of people, artefacts, features and places are intertwined and mutually constituted, we can begin to grapple with the complexities of changing prehistoric landscapes on a more intimate—and more manageable—scale.

Stage of Life	Date	Event
Pre-birth	Neolithic	Long barrow constructed at GS1-2.
	Early Bronze Age	Round barrows fill the valley bottom.
Birth	Late Bronze Age to Early Iron Age	An earthwork-trackway with two to three paired banks and ditches, with wide berms between them, is constructed perpendicular to Line A (Huggate to Garton/Sledmere). Two of the earthwork ditches, MD1 and MD2 (with associated banks and berm) continue all the way down the slack, following the contour of the valley bottom. The wide Central Berm between MD1 (Ditch F in WS) and MD2 (Ditch D/E in WS) facilitates movement.
Life	Late Bronze Age to Early Iron Age	Earthwork becomes focus for settlement in the valley bottom.
	Late Bronze Age to Late Iron Age	Construction of major perpendicular boundaries (MDS, NSD1, NSD2 and WCB) divides valley bottom radially to north of MD1.
	Iron Age (multi-phased/continuous)	Ditches are cleaned and re-cut.
	Iron Age (?Middle to ?Late Iron Age)	Ditches become focus for non-barrow burials, especially infants and children.
	Middle to Late Iron Age	Formal cemeteries develop alongside the earthwork. Square barrows are built along the south side of MD2 in GS7 and a chariot burial is constructed abutting the north side of MD1 in GS11. The first phase of the Wetwang square barrow cemetery respects the earliest phase of MD2=Ditch D/E, but encroaches upon MD1=Ditch F and the Central Berm, blocking movement along the berm. Few barrows cross to the south of MD2. Prior to third phase of Wetwang cemetery, the old alignment of MD1 (Ditch F) is re-cut (as Ditch A) and re-established as a southern boundary for the cemetery, encircling an Early Bronze Age round barrow. The newly-cleared Central Berm once again functioned as a road, and the final square barrows in the Wetwang cemetery respect MD1=Ditch A as a boundary.
	Middle to Roman Iron Age	Central Berm is metalled with gravel and flint late in its life. This may build on an earlier tradition of metalling in gravel/flint/chalk, which could potentially have occurred from the earthwork's birth onwards, but which is unsubstantiated by material evidence.
	Late Iron Age	Settlement areas in Wetwang-Garton Slack and at Blealands Nook (at the junction of the Wetwang-Garton earthwork-trackway and Line A) are subdivided by ladder settlement enclosures.
Death	Roman Iron Age	Cemetery and settlement fall out of use; date of earthwork's death is unknown, as it may have been used as a road long after the abandonment of the site. Earthwork is forgotten and not rediscovered until Mortimer's surveys in 19th century.
Rebirth	Modern	Reborn as iconic site for Iron Age settlement and burial traditions in East Yorkshire after 1960s-80s excavations.

Table 5.1 Biography of Wetwang-Garton Slack linear earthworks

5.4 Wetwang-Garton earthworks in context

The settlement-cemetery complex at Wetwang-Garton Slack does not exist in an otherwise empty landscape, and therefore its linear earthworks must be understood within their wider context. Approximately 2km to the south lies a circular enclosure (Fig 5.62, blue box), which is comparable in shape to Grimthorpe hillfort (Stead 1968; see Section 1.4.1). A linear ditch running E-W appears to align on the enclosure (see Section 4.2.1, especially Fig 4.24), and to the north, a ladder settlement running N-S stops opposite the enclosure's apparent entrance. In order to investigate the potential E-W earthwork and the space between it and the Wetwang-Garton complex, satellite imagery from Google Earth was used to identify new cropmarks (Fig 5.63). These were digitised in Google Earth using imagery from multiple dates, although 2005 proved to be the most useful year because most of the fields were parched (Fig 5.63). The digitised cropmarks were then imported into ArcGIS and compared with Stoertz's maps (Fig 5.64). The majority of the new cropmarks were continuations of known ditches, either of presumed linear earthworks (i.e. the south-eastern end of the Wetwang-Garton earthwork and the one aligned on the circular enclosure) or of ladder settlement enclosures/fields. These ladder enclosures and fields occur on a number of different alignments and therefore are interpreted to be the result of multiple phases of land division, likely related to farming.

Dent (1982, 1984, 2010) has argued that the people of Wetwang-Garton Slack would have used open, communal fields into the Late Iron Age, even after the establishment of ladder settlements. He suggests that the spaces between roundhouses within the settlement along MD1 may have been used for fields, and that if these fields were intended for arable crop production, then the large area devoted to the Wetwang cemetery would have taken prime land out of commission (ibid. 1982, 1984). Although the earlier phases of the site may lack the enclosed fields of its Late Iron Age phase—as evident from not only the ladder enclosures of Garton Slack, but also the narrow boundaries running perpendicular to the last phase of MD2 in Wetwang Slack, which divide the land to the south of the earthwork (Fig 5.57)—Dent (2010) argues that an infield-outfield model of farming could account for the wider system of farming into which both the open and enclosed fields would fit. He suggests that type of farming employed by the Wetwang-Garton Slack community might have been akin to the feudal system of Medieval Britain, with communal land use (ibid.: 23, 25). The addition of the new cropmarks discovered using Google Earth (Figs 5.64-5.65) suggests that the hillside to the south of the Wetwang-Garton Slack complex was used extensively in prehistory, probably in multiple phases. The ladder enclosures and fields are perhaps contemporary with their counterparts in the complex, and therefore may represent Middle to Late Iron Age use of the entire hillside by a single community. Possible field systems with multiple, contiguous fields are located about 300m to the south of the Wetwang-Garton earthwork (Fig 5.64, in red), and about 450m to the east of the Wetwang enclosure (Fig 5.64, in blue). The Wetwang Village chariot burial (Hill 2002) provides clear evidence that later Middle Iron Age activity extended up onto the hillside to the south of the complex, and raises the possibility that additional burials might be found within the area of the Google Earth cropmarks. All of these features seem too close not to have belonged to the same community living in the valley bottom and, in the Late Iron Age according to Dent (1984), along the northern slope of the valley.

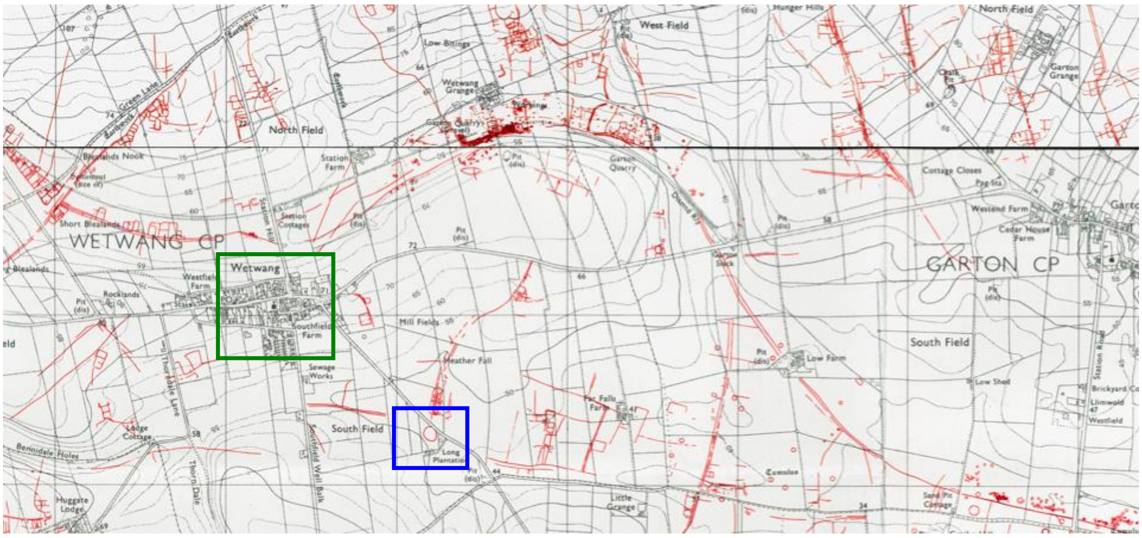


Fig 5.62 Cropmarks around Wetwang-Garton Slack recorded by Stoertz
Note the location of a circular enclosure (blue box) and the present-day village of Wetwang (green box), where the Wetwang Village chariot (Hill 2001) was found. (Basemap source: Stoertz 1997)

a

b

Fig 5.63 Digitising Google Earth cropmarks in Wetwang-Garton Slack
To digitise cropmarks visible on Google Earth imagery, a field-by-field visual analysis was conducted to the south of the Wetwang-Garton Slack settlement-cemetery complex. The raw imagery (a) was annotated with lines and polygons (b). On the annotated image (b), the blue lines represent ditches. The green line represents a possible pit alignment, although it may be a modern or geological feature. The orange polygons denote possible burials. The pink line (left edge of the image) and the blue line immediately to its south represent the same known section of the Wetwang-Garton Slack earthwork; the offset reveals the inconsistencies that can occur when working with different coordinate systems (in this case, the British National Grid and the World Geodetic System). Finally, the wide line running roughly E-W through the centre of both images is the disused Malton to Driffield Railway. Satellite imagery from Google Earth © 2013 Getmapping plc.

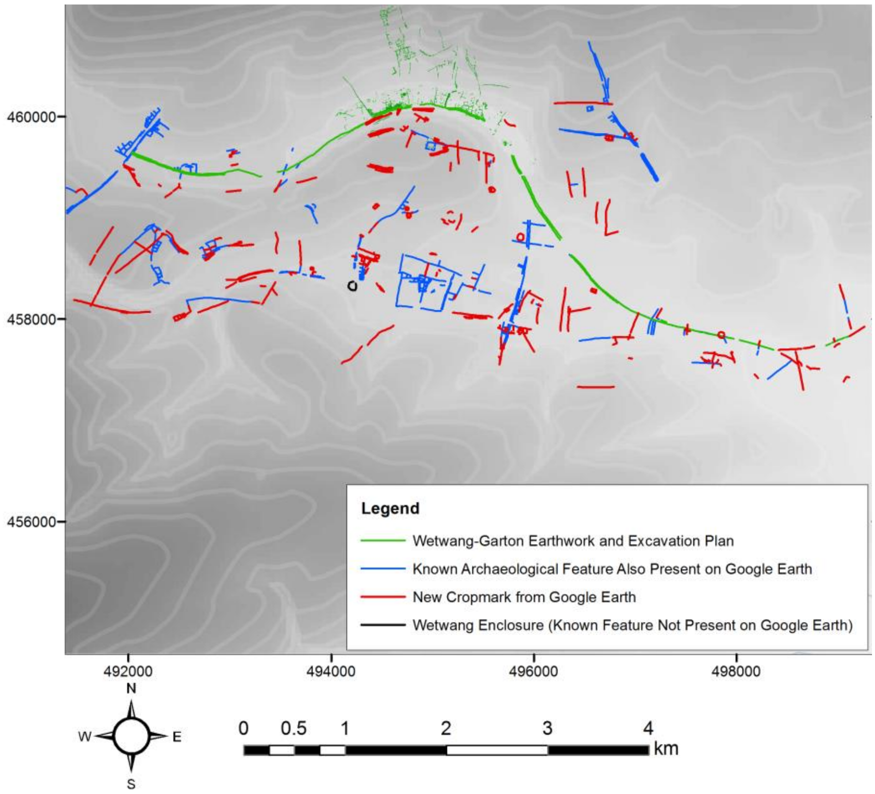


Fig 5.64 Cropmarks discovered using Google Earth imagery
Cropmarks after Stoertz (1997), Wetwang/Garton Slack Project archive and original work using Google Earth. Contains Ordnance Survey data © Crown copyright.

Fig 5.65 Wetwang Enclosure, looking west
Google Earth imagery shows different crops growing on the site for the enclosure during (a) 2003, (b) 2005 and (c and d) 2007. The circular cropmark plotted by Stoertz (1997) is not apparent on these images, but can be plotted on top of them (d). The small (2-8m in diameter) circular features within and around the enclosure that were visible in 2007 (c and d) could potentially be archaeological, but are more likely to be fairy rings caused by a fungus (Halkon pers. comm.). Geophysical survey or excavation might provide clues as to the precise location and morphology of the enclosure ditch, and potentially any features bounded by it. Satellite imagery from Google Earth © 2015 Getmapping plc, Infoterra Ltd and Bluesky.

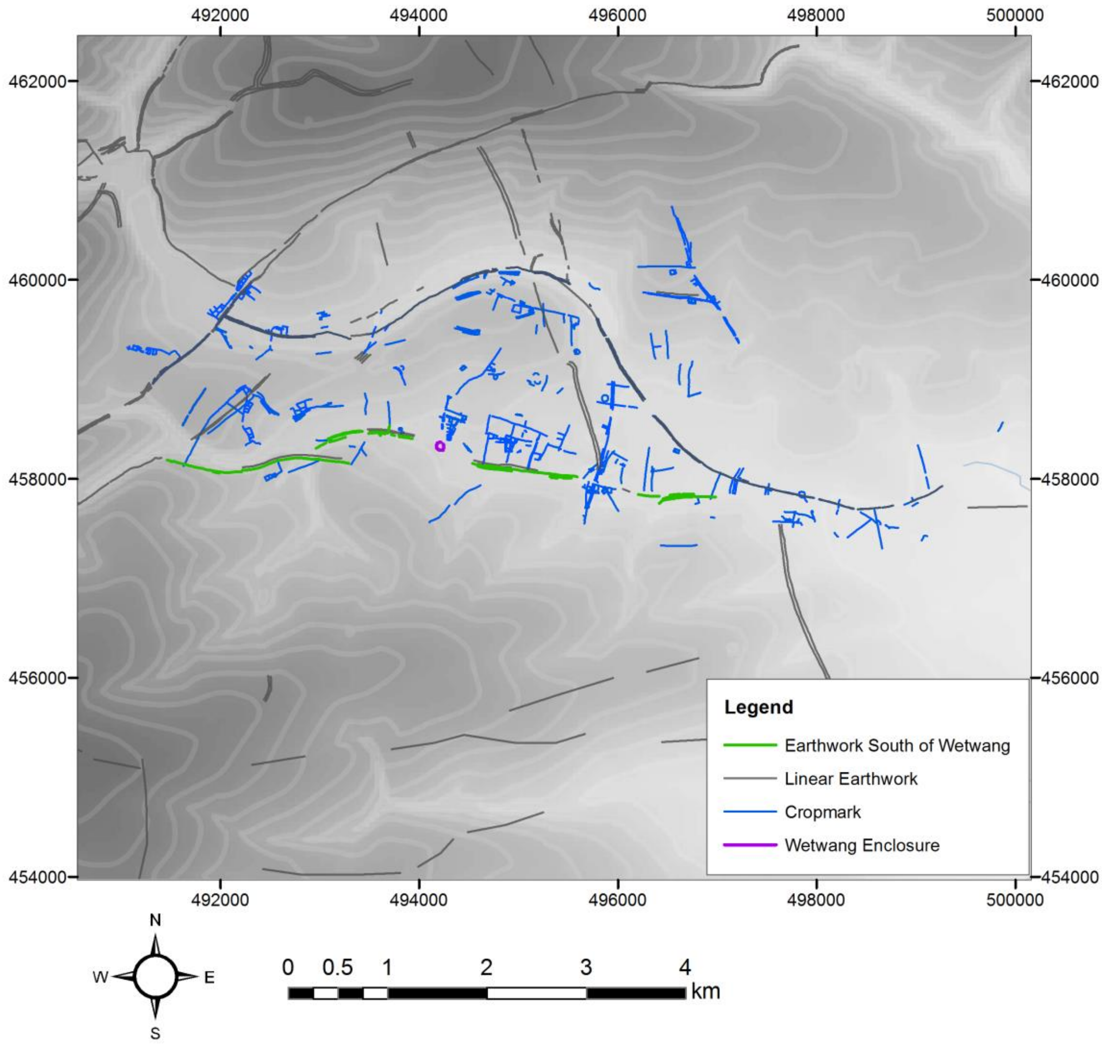


Fig 5.66 Earthwork south of Wetwang
Cropmarks after Stoertz (1997), Wetwang/Garton Slack Project archive and original work using Google Earth. Contains Ordnance Survey data © Crown copyright.

The earthwork to the south of Wetwang-Garton Slack and its potentially associated circular enclosure (Figs 5.65-5.66), which have not yet been excavated, raise new possibilities for understanding the wider context of the Wetwang-Garton Slack complex. If the enclosure is of Late Bronze Age to Early Iron Age date, as might be suspected from its morphological similarity to other enclosures on the Wolds (particularly Grimthorpe hillfort; Stead 1968; see Section 1.4.1), then that might have implications for how the community of Wetwang-Garton Slack interacted with this part of their landscape. If the enclosure exercised a sort of control over the land and was only used by a small, privileged portion of the community (e.g. Bevan 1997), then the enclosure, its earthwork and its inhabitants may have held a high degree of agency. If, however, the enclosure was used by the whole community for special events (e.g. seasonal gatherings; Giles 2007), then this would suggest that the people of Wetwang-Garton Slack did not need to travel far in order to reach an appropriately special place.

Even if the people living within the Wetwang-Garton Slack settlement-cemetery complex were not occupying the enclosure or the land between these two places, they may still have felt some affinity for whoever was. A sense of community may have extended beyond the level of hamlet or village, with nested identities that could tie together rural populations despite physical distance. In nineteenth century, for example, the modern village of Wetwang was still a focus for burials from surrounding communities. Mortimer describes how his grandfather's body was transported from Fimber to Wetwang for burial in 1836:

> 'At this time there was no burial-ground at the village of Fimber... This was believed to be the first instance in which a hearse was employed to convey a corpse from Fimber to the place of interment. Previously, and even long afterwards, the corpse was mostly taken to Wetwang in an ordinary farmer's wagon drawn by three or four horses.'
>
> (Mortimer 1978: 15)

The use of a cart to transport the deceased to Wetwang is not only vaguely reminiscent of the Middle Iron Age chariot burials, but also an indication that travel across the wider landscape was essential in both life and death, and that this travel forged relationships amongst people and places. Villages were interconnected by routeways, and it is to this mobile connectedness that the next chapter turns.

Chapter 6.
Carved out of the earth: the life of Huggate Dykes

> *People who study lines call themselves . . . I don't know what they call themselves, but I do know that I have become one of them.*
>
> *Ingold 2007: 5*

This chapter explores the super-complex linear earthwork at Huggate Dykes by charting the monument's life history through several phases of construction and modification. In order to understand the sorts of meanings that may have been ascribed to Huggate Dykes by the successive generations of people who encountered and interacted with it, the chapter maps the patterns of movement that may have occurred around, along and across the monument during its lifetime, and characterises the types of agency involved in those journeys. Finally, it attempts to demonstrate that the biography and agency of Huggate Dykes extend into the present, and that they are intertwined with those of the author and all others who have engaged with the monument during the course of their archaeological research.

6.1 Site location and description

Part of Line A (see Chapter 4), the elaborate earthworks at Huggate Dykes span a neck of high ground between two valleys near the western edge of the Yorkshire Wolds (Fig 6.1). The monument consists of upstanding remains and ploughed-out cropmarks, all of which are Scheduled Ancient Monuments (National Heritage List for England entries 1015560, 1015561 and 1015564). The village of Huggate is located to the south-east of Huggate Dykes, in a sheltered, gently sloping valley. The place-name is believed to mean 'Road/pass to the burial mound/hill', probably derived from the Old Norse *hugr* ('mound'/'burial mound' or 'hill') and *gata* ('road' or 'pass'), and possibly referring to the Bronze Age round barrows that cluster on the high ground in virtually all directions around the village (Smith 1937: 173-174; Institute for Name-Studies 2015b). Alternatively, the name might translate as

‘Hill-spur/hook road’ or ‘Hook road’, referencing topographic features in the landscape (ibid). Fenton-Thomas (2005: 138-139) favours the first translation and believes that an earlier incarnation of the modern York Lane—the road at the eastern edge of the core of the monument, which runs south-eastwards to the village of Huggate (Figs 6.1-6.2)—is the *gata* referred to by the place-name.

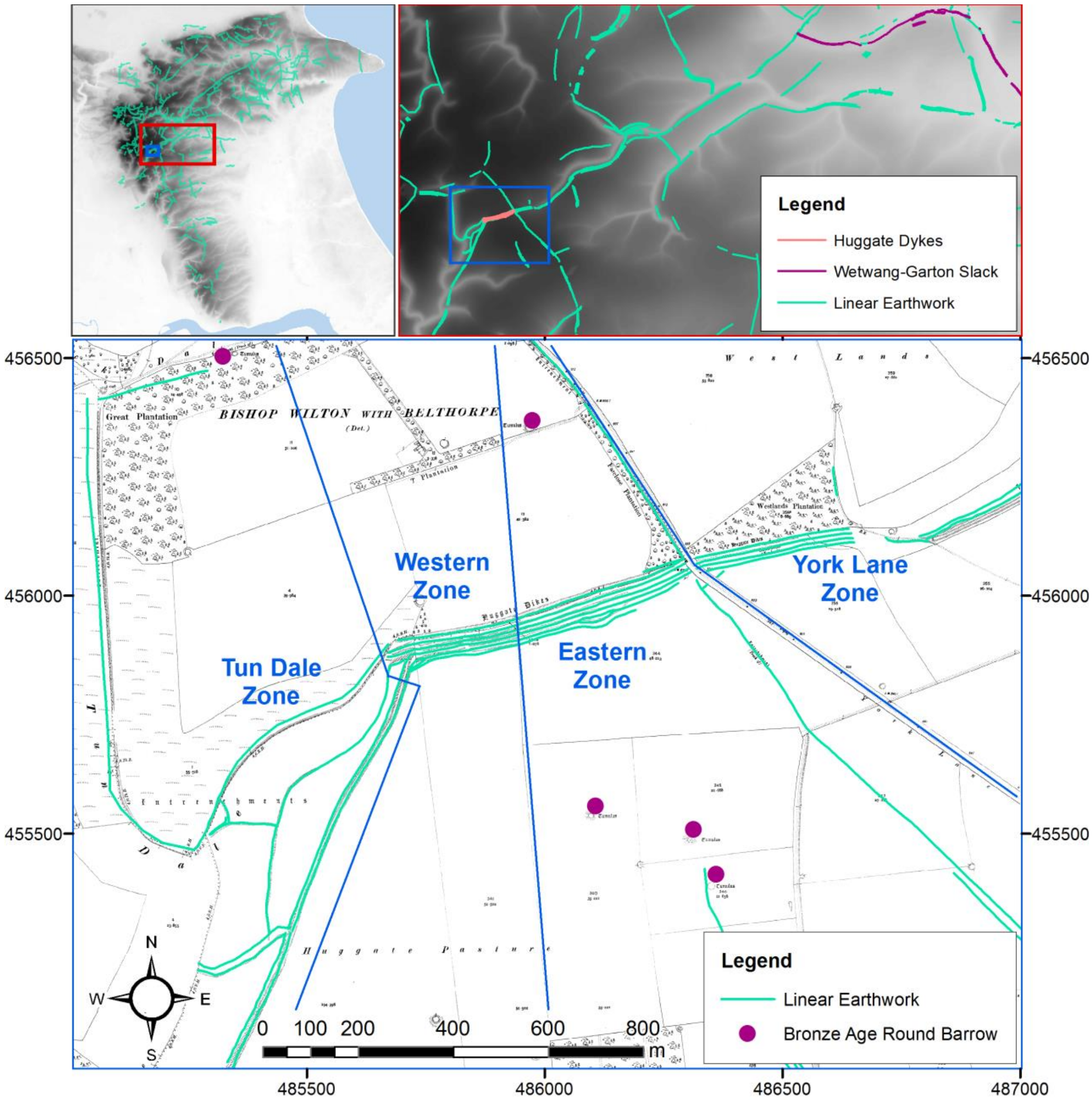
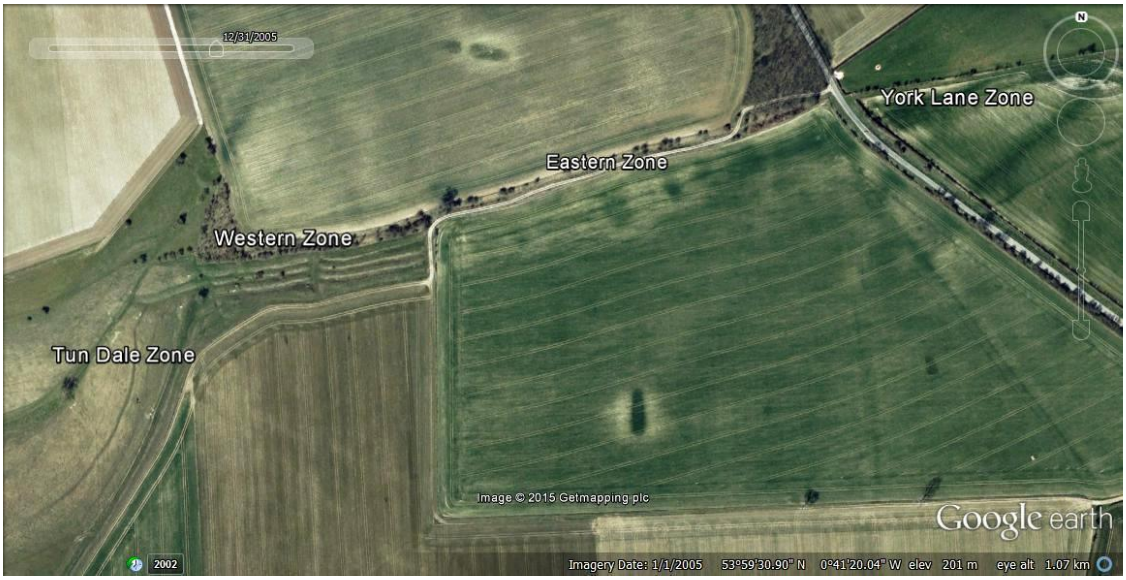


Fig 6.1 Huggate Dykes, divided into four zones
The super-complex earthwork at Huggate Dykes forms part of an alignment approximately 16km in length. In order to discuss particular features within the monument, it was divided into four zones. Earthwork data after Mortimer (1905) and Stoertz (1997). Contains Ordnance Survey data © Crown copyright.

For the purposes of this analysis, the monument was divided into four zones: the Tun Dale Zone, the Western Zone, the Eastern Zone and the York Lane Zone (Figs 6.1 and 6.2). The super-complex core of the site (Western and Eastern Zones, Figs 6.1 and 6.2) runs roughly E-W and measures approximately 800m long and 36,000m^2 or 3.6ha in area. This portion of Huggate Dykes (see Chapter 4) is comprised of six or seven closely spaced banks with six ditches; in addition to poor preservation in the Eastern Zone, the complexity of the site's biography (see below) makes accurately counting these banks difficult. The core area is bisected by a farm track, which runs westwards from York Lane (at the eastern edge of the Eastern Zone) along the top of the northernmost bank until it turns a right angle to the south at a modern field boundary (Fig 6.2a). To the west of the N-S section of the farm track, the Western Zone (Fig 6.2b) is kept under pasture and thus the banks and ditches are well preserved. Two entrances or causeways through the monument are visible in the Western Zone (Fig 6.2a); determining the origin of these entrances was one of the aims of the geophysical fieldwork carried out on the monument (see Section 6.3, below). With the exception of the northernmost ditch and bank, Huggate Dykes has been ploughed flat in the Eastern Zone (Fig 6.2a). At its western edge (Tun Dale Zone, Fig 6.1) the monument splits into three simple earthworks, which branch out into Tun Dale. The earthwork which runs along the top of the eastern slope of Tun Dale continues south-westwards into Frendal Dale. Another earthwork, located downslope of the previous in Tun Dale, appears to have been used as a trackway (Mortimer 1905: foldout map at front of volume; see Section 6.3). The Eastern Zone is bounded on its eastern side by York Lane; Mortimer (1905: foldout map at front of volume) shows four banks continuing eastwards beyond the road into the York Lane Zone, although only the northernmost of these banks appears on Ordnance Survey maps and in Stoertz's (1997) data. These appear to stop at Horse Dale, and possibly branch out around it on the high ground overlooking the valley, with two banks continuing eastwards (forming Line A) and a very short stretch of a single earthwork possibly turning northwards (the short N-S earthwork is too fragmentary to provide any clues as to its relationship with Huggate Dykes; Fig 6.1).

a



b

Fig 6.2 Huggate Dykes from above (a) and on the ground (b)
a: Google Earth imagery of Huggate Dykes, with zones marked. Satellite imagery from Google Earth © 2015 Getmapping plc
b: Upstanding banks and ditches in the Western Zones, looking east. Photograph: author.

Working backwards through Ordnance Survey maps and historic records, it is possible to trace the use of Huggate Dykes as a boundary through time. Late in the monument's life history, its various banks were utilised as administrative boundaries between civil parishes (Fig 6.3). The ditch or depression to the south of the northernmost bank of the Western and Eastern Zones—the bank with the farm track—forms the boundary between

Huggate Civil Parish and a detached portion of Bishop Wilton with Belthorpe Civil Parish (a historic division which is now part of Millington Civil Parish), and the north-westernmost earthwork in the Tun Dale Zone divides these two parishes from Millington Civil Parish. Further to the south, the south-easternmost earthwork in the Tun Dale Zone forms the boundary between the parishes of Millington and Warter. Whilst the site may have remained a cosmologically meaningful place in the landscape well into the historic period, the likelihood is that monumental earthworks at Huggate Dykes would have been immensely practical for the laying out of administrative boundaries, as they would have been easy to see and recognisable in the landscape (see Giles 2012: 40-41 and Section 7.1.2 for a description of Beating the Bounds, the performative boundary-marking exercise which reinforced the locations of parish boundaries in the eighteenth and nineteenth centuries). When the East Riding Wapentakes were established in the twelfth century, the monument sat within the Harthill Wapentake; this wapentake was subdivided by the Elizabethan period, and the land around Huggate Dykes formed the north-eastern part of the Wilton Beacon Division (Baggs et al. 1976).

According to the Domesday Book, the land at Huggate belonged to the Warter Hundred (Powell-Smith and Palmer [2011]b), whereas the land at Greenwick (to the north of Huggate Dykes) belonged to the Pocklington Hundred (Powell-Smith and Palmer [2011]a). This suggests that the use of Huggate Dykes as an administrative boundary may date back to the Norman Conquest or earlier. Winchester (2000a, 2000b) notes that when ecclesiastical parish boundaries—the predecessors of civil parishes, in terms of local administration—were laid out in the late Anglo-Saxon period, they tended to follow the lines of natural topographic features, like rivers, where possible. Although the Yorkshire Wolds are a largely open landscape without major water features or peaks, the distinctive slacks at the fringes of the Wolds and the later prehistoric linear earthworks which embellish subtle features within the natural topography surely would have been attractive boundary-markers in an otherwise gently rolling landscape. Studying the Norman landholdings of the Wolds, Harvey (1984) argues the regular, planned open fields associated with Domesday Book landowners could have their origins in the Anglo-Saxon period, although they were traditionally thought to have been laid out during a period of reorganisation after William the Conqueror's army laid waste to the Wolds. As a point of comparison, Harrison's (2002) study of the Anglo-Saxon open fields of the Chiltern Hills (Cambridgeshire) reveals that these new fields were laid out along earlier linear earthworks and trackways, forming six long, linear parishes which reflect earlier patterns of agriculture and movement (see also Upex 2002, who suggests that some Cambridgeshire fields have been fossilised since the Roman period). If similar processes were operating on the Wolds during the early medieval period, then the administrative boundaries on and around Huggate Pasture may have been just as reliant on earlier routeways, and as the rest of this chapter hopes to demonstrate, Huggate Dykes was a place where several prehistoric routeways converged.

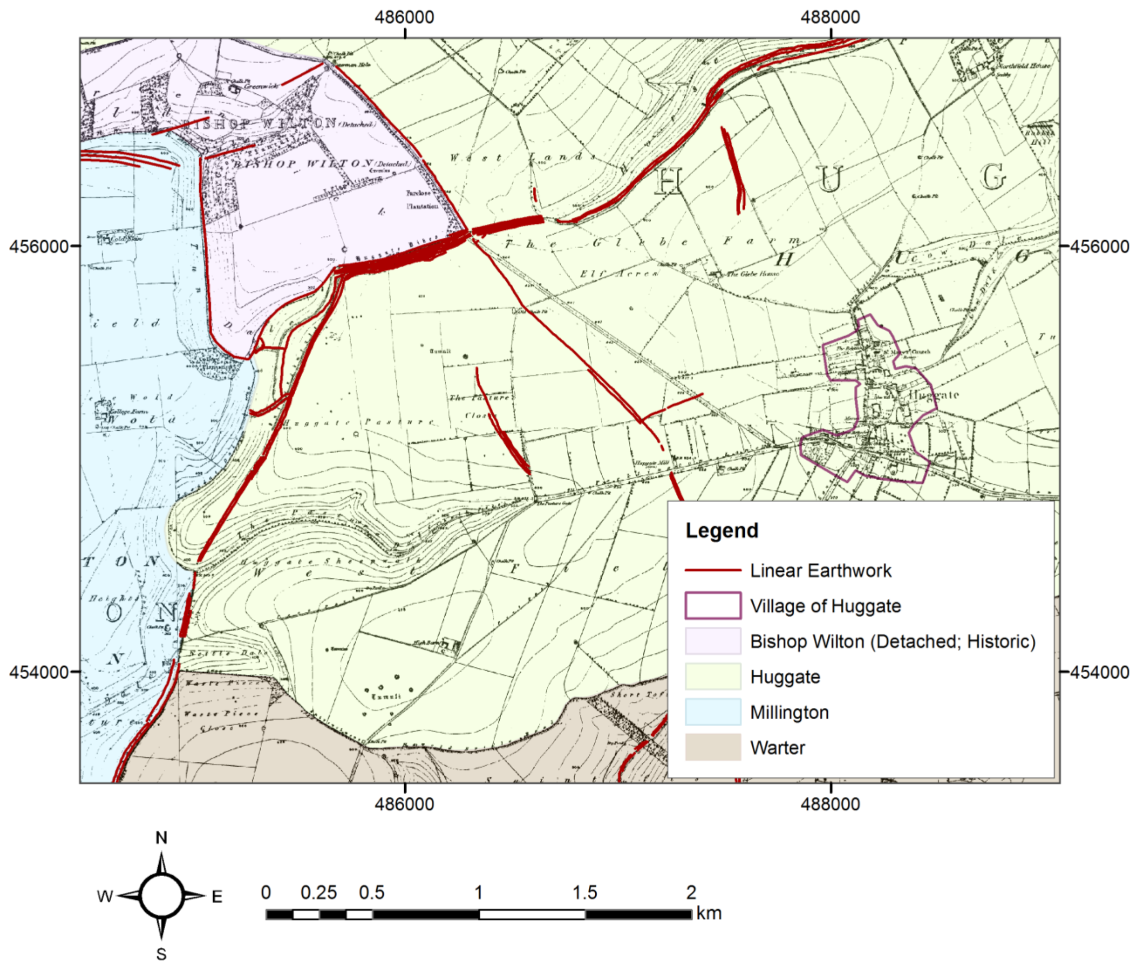


Fig 6.3 Civil parish boundaries around Huggate Dykes
Earthwork data after Mortimer (1905) and Stoertz (1997). Contains Ordnance Survey data © Crown copyright.

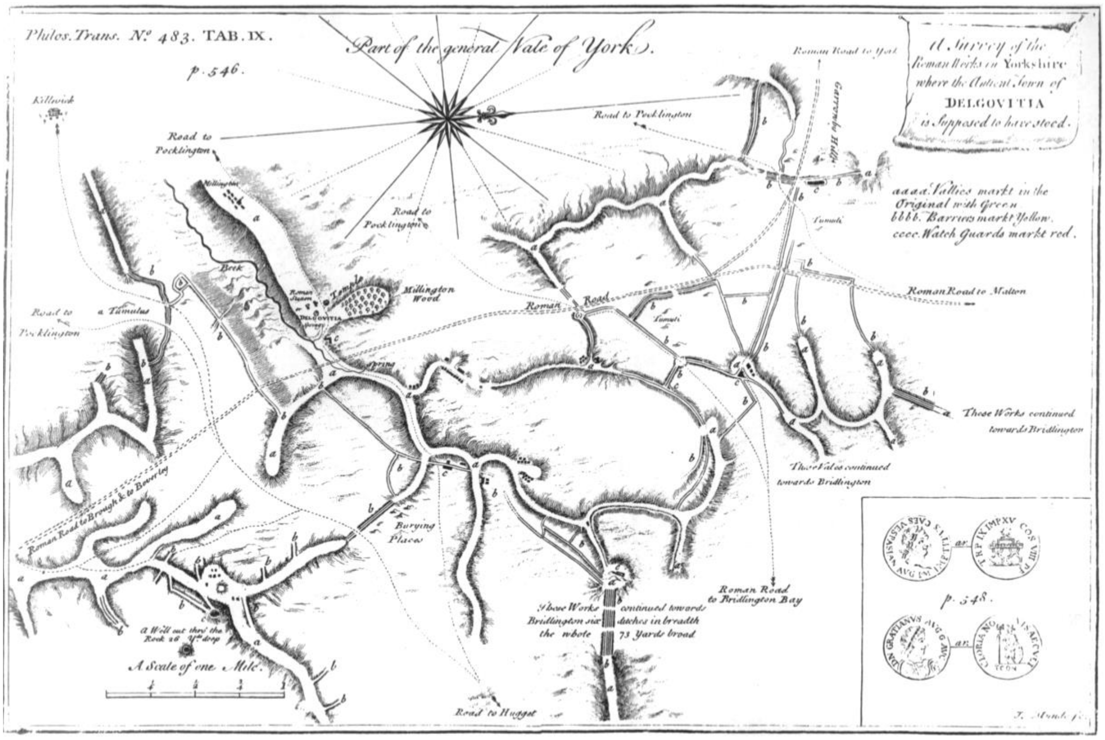
6.2 Evaluation of previous work

The earliest known map where Huggate Dykes is shown as an archaeological feature was created by Dr John Burton of York in the 1740s, during his search for the Roman station of Delgovitia (Burton 1747). Burton believed that Delgovitia had been located at Millington, and after surveying of the surrounding landscape with his colleague Francis Drake (see Drake's brief account; Drake 1747), he interpreted the linear earthworks near Millington to be 'Roman Works' or fortifications around the camp:

> 'All along the Hills, from Vale to Vale are *Roman* Works, represented in the Plan at *b.b.b.b.*; so that nothing could pass that Way, without the Knowledge and Consent of the Guards. It must also be observed, that, of all the Works, those guarding the Parts toward *Bridlington* are the strongest; they being from 4 to 6 Ditches in Breadth, each of which are 10 or 12 Yards broad.'
>
> (Burton 1747: 548, italics original)

Included in the 'Parts toward Bridlington' is Huggate Dykes, which is shown as six ditches stretching across the entire ridge of high ground between Tun Dale and Horse Dale, with two gaps in the ditches (Burton 1747: Tab IX; Fig 6.4). When georeferenced (Fig 6.4b), the eastern gap corresponds to York Lane, and the western gap probably shows the position of the farm track which separates the Western Zone from the Eastern Zone. Burton does not depict the curvilinear banks and ditches in the Eastern Zone (these should be located near the word 'six' on the map in Fig 6.4b), which may mean that he did not survey the site with great attention, or that he failed to notice that the monument was not straight, perhaps because he was not expecting it to be otherwise.

a



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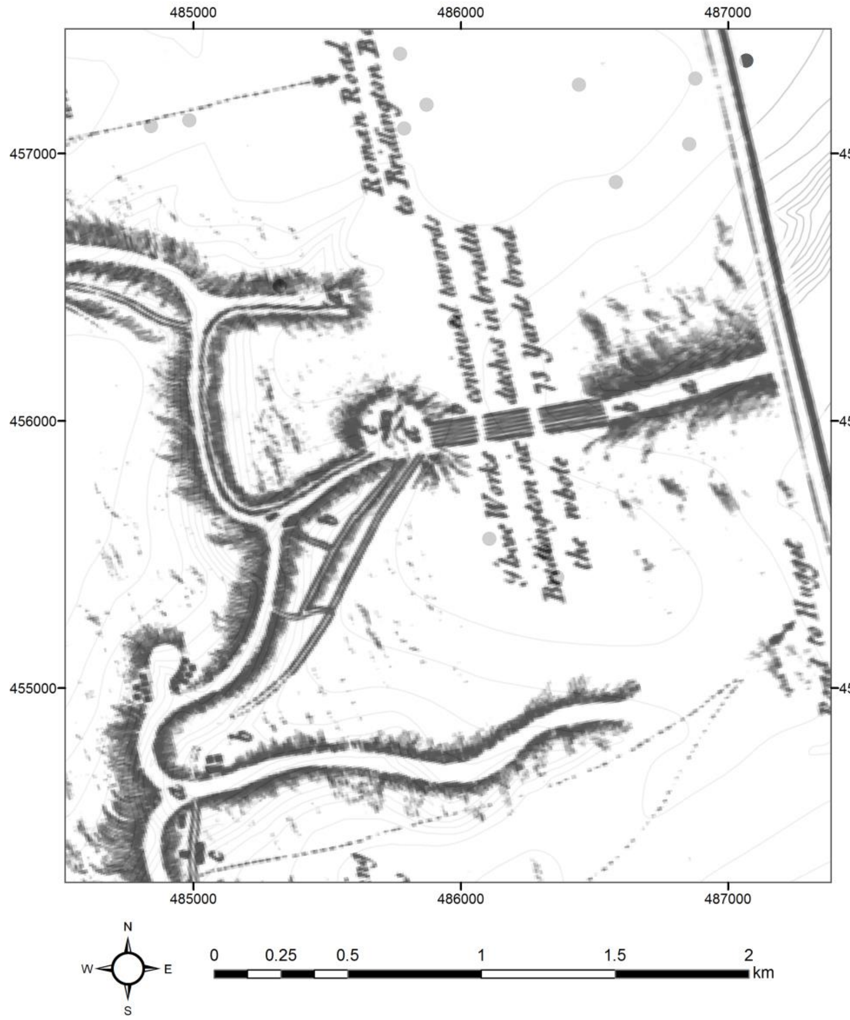


Fig 6.4 Burton's map of Delgovitia (a), including Huggate Dykes (b)

Burton believed that Millington was Delgovitia, and that the earthworks of the Wolds were Roman fortifications manned by guards (a). The zoomed-in, georeferenced view of Huggate Dykes (b) shows Burton's labels: valleys are marked *a*, earthworks are marked *b* and what he interprets to be 'watch-guards' are marked *c*. Huggate Dykes has all three of these features. Source: Burton 1747: Tab IX. Georeferenced (b) by the author. Contains Ordnance Survey data © Crown copyright.

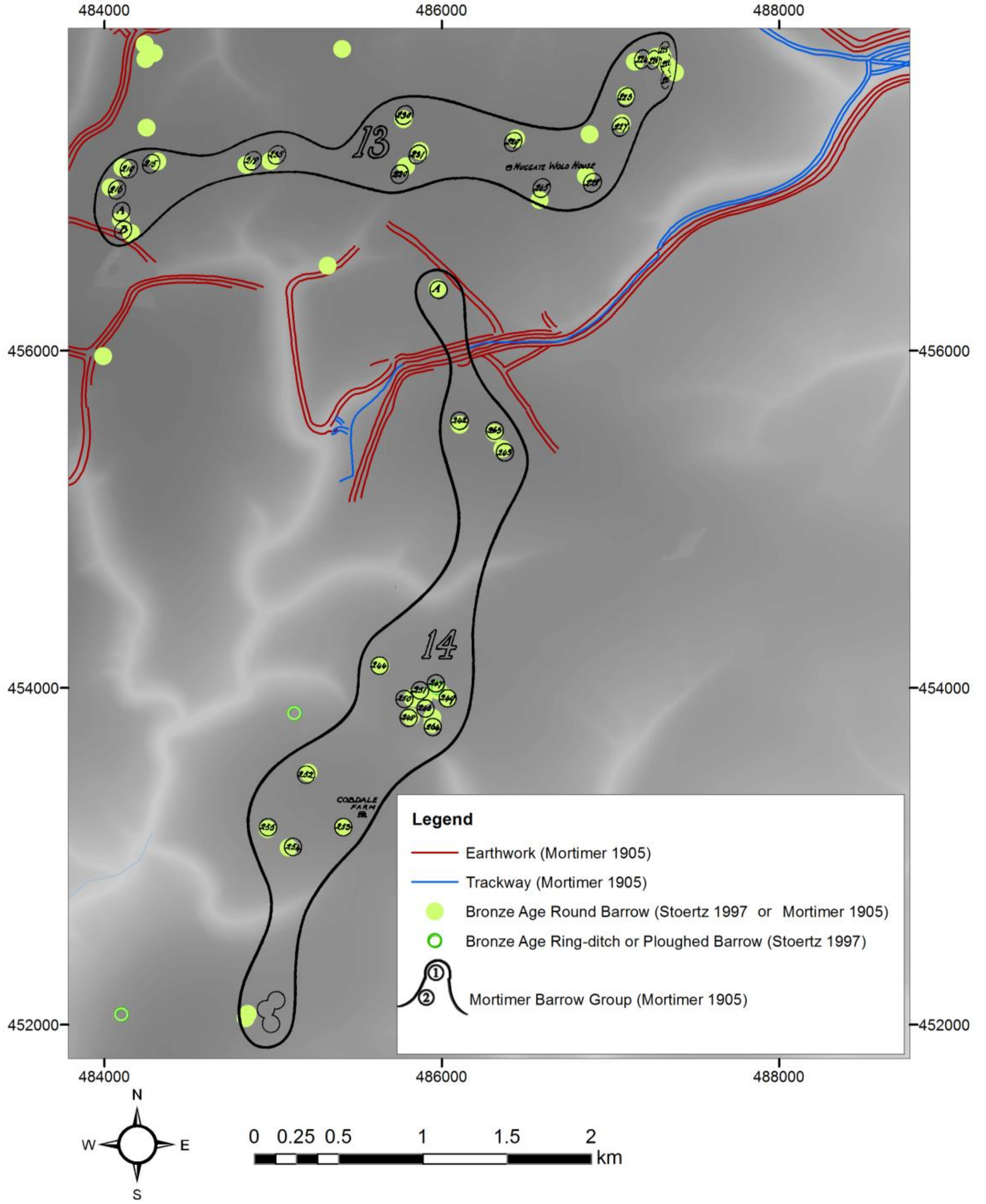


Fig 6.5 Mortimer's round barrows around Huggate Dykes
Barrows from Mortimer's Groups 13 and 14 cluster on the high ground around Huggate Dykes. Data after Mortimer (1905) and Stoertz (1997). Contains Ordnance Survey data © Crown copyright.

As discussed in Chapter 1, antiquarians of the nineteenth century (e.g. Pitt Rivers, Greenwell) used landscape surveys and explanations to argue for and against the military nature of linear earthworks; whereas Burton (incorrectly) believed them to be constructed by the Romans, his nineteenth century counterparts disagreed about who their builders were (see Section 1.4.3). Huggate Dykes features in the publications of Cole (1888) and Mortimer (1905), although neither appears to have excavated the earthwork.

In line with the rest of the Wolds, antiquarian excavations—as opposed to landscape surveys—around Huggate Dykes tended to focus on funerary monuments, rather than on the earthworks themselves. Although Mortimer did excavate both earthworks (which he calls 'entrenchments'; 1889, 1905: 369-370, Pl C Fig Ee) and trackways (which he calls 'hollow-ways' or 'Ancient Sunk Roads'; ibid.: 381, 384-385) elsewhere on the Wolds, he is only known to have excavated the round barrows on Huggate Pasture (1905: 311-321; Fig 6.5). In order to understand why the people who constructed Huggate Dykes chose to monumentalise this particular tract of land—and how previous studies of the monument have understood the monument's context—it is necessary to consider the development of the place before the advent of linear earthworks.

In his magnum opus, which presents the results of excavations and field surveys spanning almost half a century, Mortimer (1905: 311-321) identifies a roughly linear cluster of 19 Early Bronze Age round barrows running south from Huggate Pasture (his Huggate and Warter Wold Group, also called Group 14; Fig 6.5). In the immediate vicinity of the super-complex portion of Huggate Dykes are four barrows, one of which lies to the north (Mortimer's Group 14 Barrow A, which he did not personally excavate) and three of which lie to the south (Mortimer's Barrows 242, 243 and 263; Fig 6.5). In 1851, James Silburn excavated several barrows in the area, including Mortimer's Barrows A, 242 and 263 (Mortimer 1905: 311-312). Barrow A was excavated again in 1881 by a Mr Thomas of Boston (ibid.: 311), and Mortimer's own excavations on Huggate Pasture took place in 1882 (Barrows 242 and 243) and 1883 (Barrow 263). Mortimer's excavations revealed that, with the exception of a skull from Barrow 242, Silburn had not been interested in skeletal remains; Mortimer surmises that 'most probably it [the skull] was found in good preservation and taken away by him [Silburn]' (ibid.: 312). What Silburn does catalogue, however, are artefacts (ibid.: 311), and his treasure-hunting approach to excavation—which is not unexpected for an antiquarian of the mid-nineteenth century—appears to have made an impression on the local people who managed the barrow landscape. Mortimer (ibid.: 312) recalls an encounter with a shepherd, Mr C Rooks, that took place at Barrow 263 in 1883. Rooks remembered Silburn's 1851 excavation and presumed that Mortimer too was interested in treasure:

> ‘Soon after the commencement of our research we were visited by C. Rooks, the pasture shepherd, who, although quite deaf, had held this office many years. After viewing us for a short time with intense curiosity, he thus accosted us,—“What ah ya’ deeain’? Ah ya’ guvvament chaps? Ah ya’ lewkin’ fo’ munney? Yoo’ll fynd nowt. Ther was sum chaps dug inti’t thotty year sin’. They meead a greeat hooal at wad ha’ teean me up bi heear-a-way,” (meaning nearly up to his ears), “bud they fand nowt.”’
>
> (Mortimer 1905: 312)

This exchange also suggests that the barrow had substantially eroded from the 1850s to the 1880s, as when Mortimer conducted his excavation the barrow was ‘not more than 2 feet high’ (ibid.) and Rooks indicates that the earlier dig had required a deep trench to reach the centre of the barrow. Mortimer seems to have valued this particular exercise in public relations—as he surely would have omitted it from his publication if he thought Mr Rooks’ views and recollections to be useless for his understanding of the site—and in that sense his fieldwork reflects a sort of multi-vocality, drawing upon not only the tangible archaeological remains that he observed on the ground, but also the intangible lived experiences of someone who had interacted with Barrow 263 over a period of more than thirty years. Mortimer’s account of this barrow excavation reads like a narrative, and thus it would be easy to trace the barrow’s biography through the nineteenth century. Unfortunately, this level of detail (i.e. dates of fieldwork) is not available for Mortimer’s investigations of Huggate Dykes, and his publication does not offer any insight into how his contemporaries (or predecessors) experienced or interacted with the earthworks. The exact date when Mortimer created his plan of Huggate Dykes (ibid.: Pl C Fig Ee; Fig 6.6b) is unclear; his chapter on the linear earthworks of the Wolds (ibid.: 365-380) does not give a date for his work at this site, nor does it confirm whether or not he conducted any excavations there. The banks and ditches are shown in profile at the right-hand side of the plan; their rounded morphology suggests that this was how they looked on the ground without excavation, which would have revealed a steeper profile (see the description and section from Varley's excavation, below). However, even without excavating the earthwork, Mortimer has created a detailed plan of the site, and must have encountered it on multiple occasions when he was excavating the round barrows on Huggate Pasture.

Mortimer had the benefit of using Ordnance Survey maps to contextualise the linear earthworks that he (and his family) surveyed and excavated. Mortimer's map (Figs 4.13 and 6.6a and 6.6c) indicates that where the western end of Huggate Dykes branches off in multiple directions, the Ordnance Survey's First Edition Six Inch map series (the edition referenced by his map; Mortimer 1905: 378) had not mapped both of the banks that continue to the south along the eastern edge of the dale. The western, downslope bank appears to have been known from the Ordnance Survey and is drawn in black, whereas the eastern, upslope bank is shown in red. On the First Edition Six Inch map (1855, Fig 6.7a), the Ordnance Survey shows one-and-a-half banks, or perhaps a single bank downslope of a revetted or moderately embellished hilltop. Mortimer's map contains a profile of the banks in question (Fig 6.6c), which suggests that they are indeed two pairs of banks and ditches with the sequence *ditch-bank-ditch-bank,* moving from west/downslope to east/upslope. The topography seems to inform, if not dictate, the morphology of these banks and ditches; as the ground dips downwards from east to west, the upslope bank would have required a smaller volume of chalk upcast to appear as monumental as the downslope bank, at least when viewed from downslope. Although Mortimer's map seems to suggest that the Ordnance Survey's depiction of this earthwork is incomplete, it would be unfair to say that the Ordnance Survey missed or mischaracterised the smaller upslope bank and its correspondingly smaller ditch. Indeed, the Six Inch maps from both the First Edition (1855; Fig 6.7a) and the First Edition Revised (1892; Fig 6.7b) series appear to reflect the monument as it appears on the ground today, with a clearly perceptible bank and ditch immediately downslope of a subtly embellished hillside. This disagreement between Mortimer and the Ordnance Survey maps about what exactly constitutes an earthwork bank—and, consequently, how monumental that earthwork is (i.e. single, double)—highlights the morphological variation that should be expected within any given earthwork. Parallel sets of banks and ditches may respond to minute differences in topography, and they may be the result of different phases of earthwork construction, maintenance and modification (see Section 6.3, below).

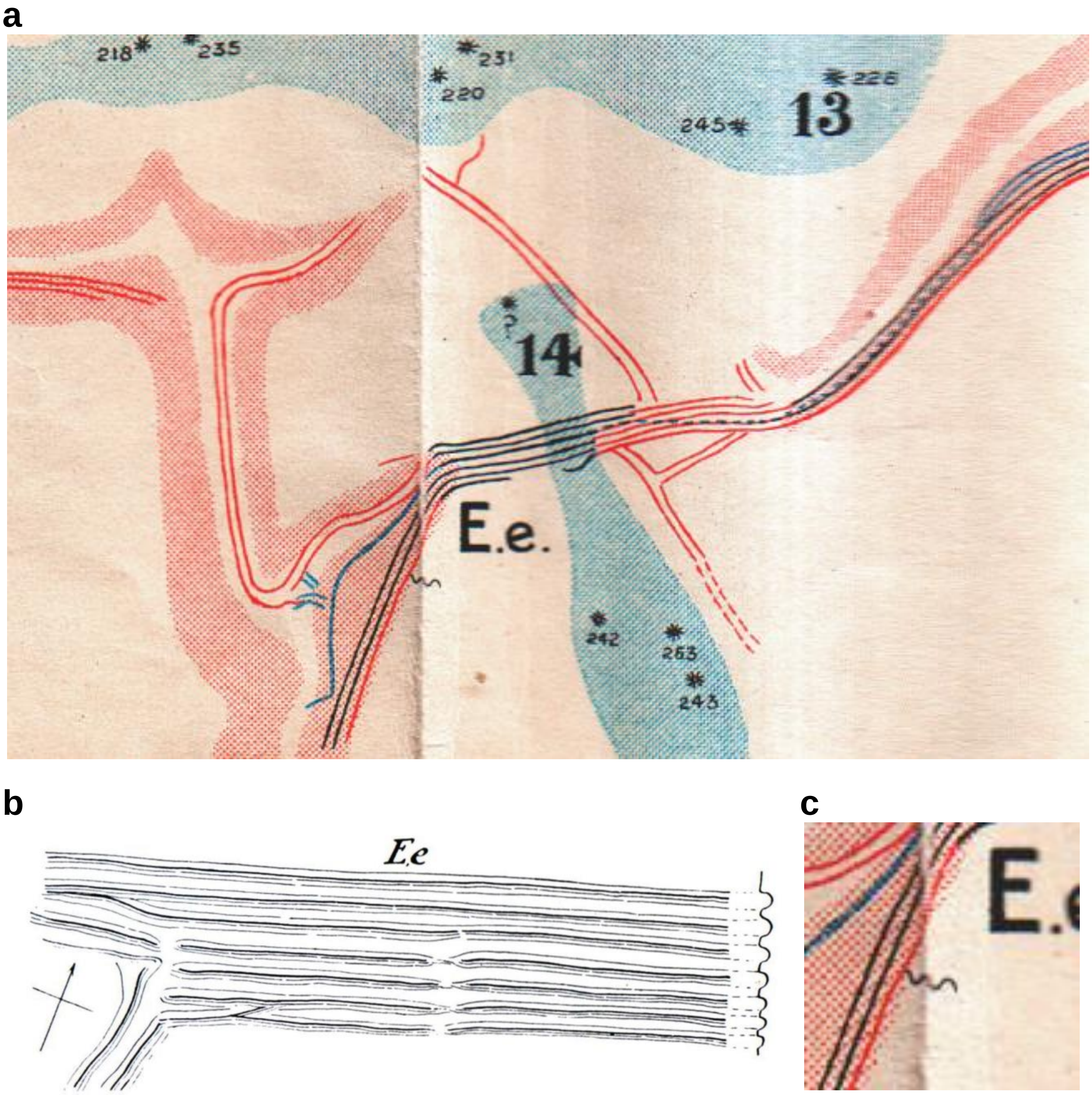


Fig 6.6 Mortimer's map (a) and plan of Huggate Dykes (b), with a profile of the banks and ditches running south from the core of the monument (c)
Earthworks mapped by the Ordnance Survey are shown in black on Mortimer's map (a), and earthworks that he discovered are shown in red. The plan of Huggate Dykes (b) appears to map the westernmost portion of the monument, from its edge at the neck of Tun Dale to the access track that cuts through the monument (immediately above the 'E.e.' on the map, where the southernmost E-W line of the monument ends). The banks and ditches are shown in a stylised profile at the right-hand side of the plan; their rounded morphology suggests that this was how they looked on the ground without excavation, which would have revealed a steeper profile. An even more stylised profile of the two pairs of banks and ditches running SSW from the western edge of Huggate Dykes appears on the map (c). This does not show the effect of the topography (the profile is level and its components are uniform in size, which is not how the earthwork appears in the landscape today). (Source: Mortimer 1905: foldout map at front of volume and Plate C Fig. Ee)

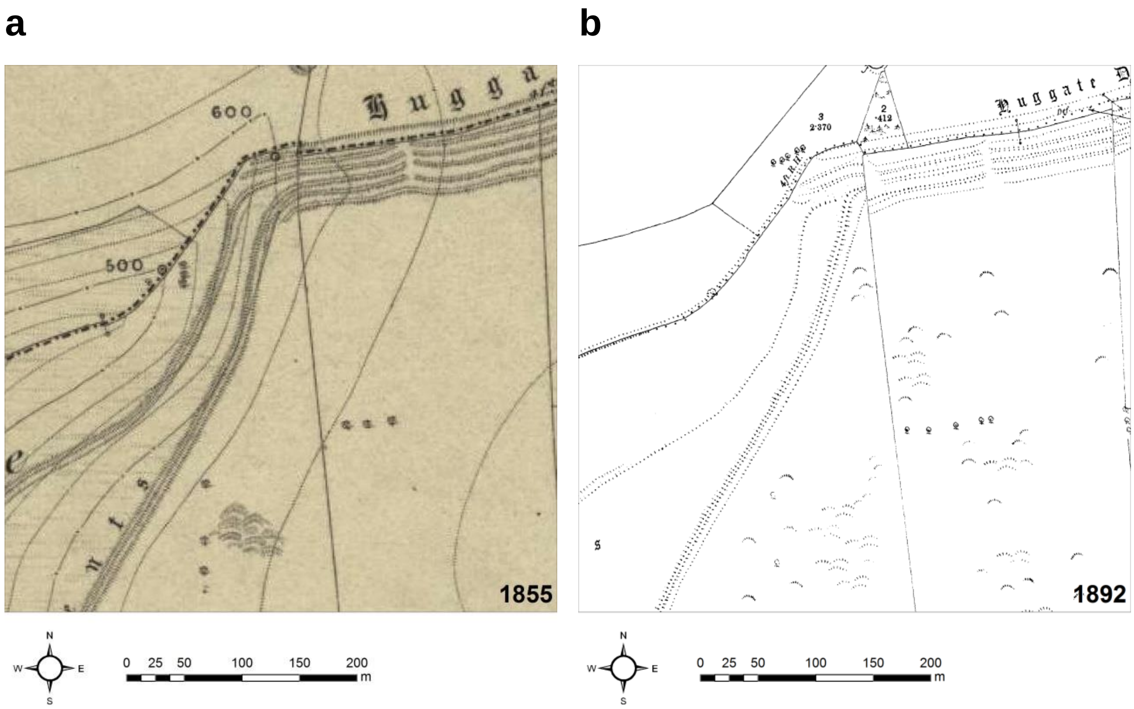


Fig 6.7 Six Inch OS maps available at the time of Mortimer’s (1905) publication, showing the earthworks running SSW from Huggate Dykes
Mortimer (1905: 378) states that the OS map referenced by his foldout map is the Six Inch edition published in 1852, centring on Sheet 160. According the publication information in the margin of the Sheet 160 of the First Edition Six Inch series (hosted online by the National Library of Scotland), this area was surveyed in 1851, contoured/engraved in 1854 and published in 1855. It appears that Mortimer is referring to the 1855 edition, rather than one from 1852. Thus, it is slightly curious that he should indicate that the eastern bank running SSW from Huggate Dykes was missed or somehow discounted by the Ordnance Survey, as a second bank (or half bank) is clearly depicted on both the 1855 and 1892 editions. Contains Ordnance Survey data © Crown copyright.

Archaeological exploration at Huggate Dykes appears to have virtually ceased for the greater part of a century following Mortimer’s surveys. The site’s various earthworks were designated Scheduled Ancient Monuments in 1929 (National Heritage List for England entries 1015560, 1015561 and 1015564), and the next recorded fieldwork to have taken place on the site was a small excavation by WJ Varley in the early 1970s. Although the results of the excavation were never fully published and no archive is known to survive (Halkon pers comm), a short description and section drawing (Fig 6.8) are provided by Challis and Harding (1975: 161, Fig 65). The section drawing (ibid.: Fig 65) shows what are reported to be the northernmost bank and ditch (ibid.: 161), although the precise location of the trench along the monument is unclear. As the earthworks in the Eastern Zone were not upstanding at the time of the excavation (see Section 6.3.1) and the excavation seems to refer to the core of the monument (rather than the earthworks that branch out into Tun Dale), the trench must have been located somewhere in the Western Zone. If the trench was excavated through the true northernmost bank and ditch, this would be somewhere along the parish boundary and is probably now under tree cover (red lines, Fig 6.9). However, if Challis and Harding (ibid.) are referring to the northernmost bank and ditch within the area of the monument under pasture—which is the most obvious, visible portion of the monument on the ground—then trench would have been located immediately to the south of the true northernmost bank and ditch (blue lines, Fig 6.9). Because all of the banks measure approximately the same width and height, it is difficult to use the dimensions of the bank in the section drawing to narrow down where the trench was actually located.

The monument's construction has been dated to the Late Bronze Age (Halkon 2013: 52-53) based on pottery which Varley found in basal fill of the ditch; the pottery was initially reported to be Iron Age by Challis and Harding (ibid.: 161, Fig. 65), but a re-evaluation (Halkon 2013: 52-53) found it to be Late Bronze Age. An Anglo-Saxon burial urn was cut into the bank to the south of the ditch where the pottery was discovered. The section drawing shows that the bank is of dump construction and is composed of chalk blocks, with a flat, steeply sloping face on its southern side and a gentler, tumbled profile on its northern side (Fig 6.8). This asymmetrical shape may be due to erosion on the northern side and later re-cutting on the southern side (e.g. when the Anglo-Saxon burial urn was inserted), or it may have been part of the original design of the monument, with only one side intended to have a clear face. If the latter is true, then that might suggest that the monument had an 'inside' and an 'outside', and that movement around and across it could have had such connotations as well (see Sections 6.3 and 6.4, below). The northern ditch is shown to be U-shaped and quite shallow in relation to the bank, and where a ditch would be expected to the south of the bank—given that this is supposed to be the northernmost bank, and therefore should have additional ditches and banks immediately to its south—there is only a slight depression. This might indicate that the trench was located at or near one of the entrances (for entrance locations, morphology and phasing, see Section 6.3, especially 6.3.4, below), or at the interface between the Western and Eastern Zones, where the banks and ditches gradually slope away from the ground surface. However, the shape of the southern ditch is not sufficiently distinctive to locate the trench on the ground, and thus the exact place where Varley excavated remains elusive.

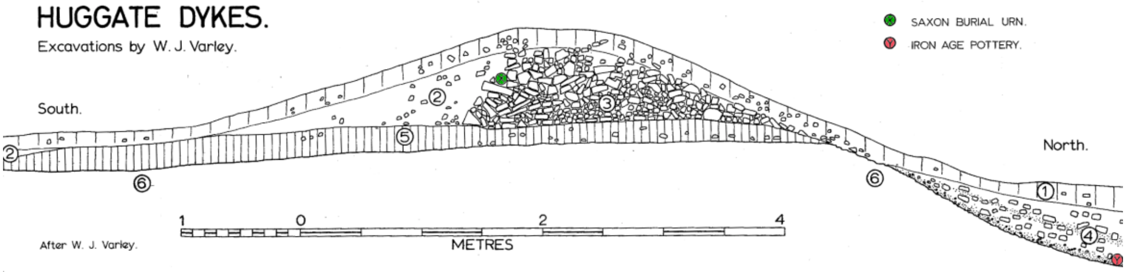


Fig 6.8 Varley's section drawing of a bank and ditch at Huggate Dykes
The section drawing appears to show a layer of topsoil (1) covering a dump bank made up of chalk blocks (3) and a layer (2) of soil with smaller chips of chalk. The chalk blocks (3) are built with a sloping southern face, into which an Anglo-Saxon burial urn (X, in green) was cut. Layer (2) peters out to the south, and (3) appears to have tumbled down into a ditch to the north. Both (2) and (3) overlie a what appears to be a buried surface (5). The chalk bedrock (6) has been cut away to the north of the bank to form a U-shaped ditch, which has a fill (4) of soil and chalk blocks. In the base of the ditch there is a sherd of Late Bronze Age pottery (Y, in pink; dated to the Iron Age here, but re-dated by Halkon 2013: 52-53). (Source: Challis and Harding 1975: Fig 65; colour added, but otherwise unchanged)

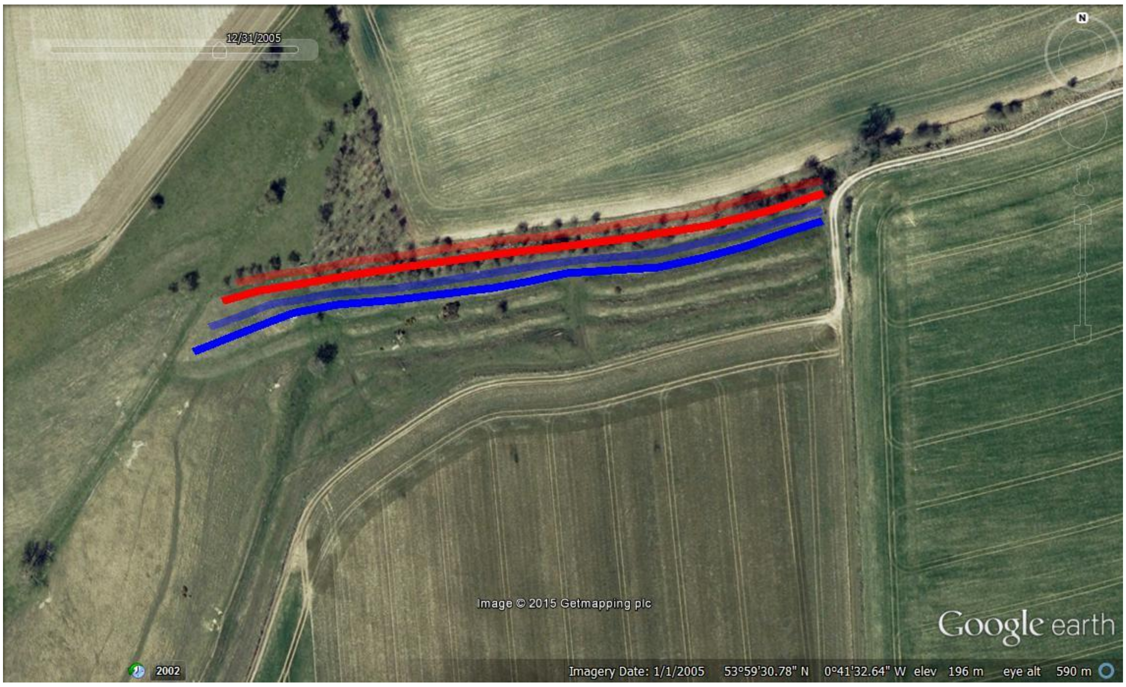


Fig 6.9 Possible locations of Varley's trench
Red lines indicate northernmost ditch (semi-transparent) and bank (opaque) if parish boundary (now almost entirely under tree cover) is included. Blue lines indicate northernmost ditch (semi-transparent) and bank (opaque) if parish boundary is not included and only the more obvious earthworks are considered. Satellite imagery from Google Earth © 2015 Getmapping plc.

Aerial photography has been instrumental in not only making it possible to visualise Huggate Dykes in its entirety—which is impossible on the ground—

but also to contextualise the monument. The aerial photographic transcriptions published by Stoertz (1997; Fig 6.10) show that Huggate Dykes is surrounded by routeways, both ancient and modern. The earthwork or trackway running perpendicular to the monument at the eastern edge of Eastern Zone leads to ladder settlement cropmarks on Warter Wold, and linear cropmarks running south-east from Mortimer's Barrow 243 (the southernmost of the three round barrows marked in red; Fig 6.10, upper centre, immediately south of the blue arrow) appear to be a trackway or droveway. These two trackways appear to meet at Keasey Dale (which lies between the southern edge of Huggate Pasture and the northern edge of Warter Wold; Fig 6.10, centre), and shorter linear ditches between and beside them divide up the land into field-sized units. Additionally, there are ladder settlement cropmarks to the south of Horse Dale, where Line A continues, and immediately to the north of the village of Huggate (Fig 6.10, upper right). These indicate Late Iron Age activity in the vicinity of Huggate Dykes, but the general lack of post-Early Bronze Age cropmarks immediately surrounding the monument, with the exception of the trackway at the eastern edge of the Eastern Zone, may suggest that following the construction of the earthworks, Huggate Pasture was not considered an appropriate place to live or built smaller land divisions. This contrasts with sites like Wetwang-Garton Slack, where extensive settlement and funerary activity took place alongside linear earthworks throughout the Iron Age, and therefore it is possible that these earthworks held vastly different meanings to the people who built, modified and encountered them. Aerial photographs taken by Halkon in 2010 (Fig 6.11) reveal the complicated nature of the surviving banks and ditches at Huggate Dykes; the level of detail present in the photographs is difficult to see on the ground, where the banks and ditches are too large for the human eye to see in their entirety. This is particularly true at the interface between the Western and Tun Dale Zones (Fig 6.11b), where the southernmost banks intersect and cut through each other. This portion of the monument appears to have been constructed in stages, with banks being modified and entrances being added, and thus this project hoped to clarify which features may have been original, and which may have been added later in the monument's life history (see Section 6.3.4, below).

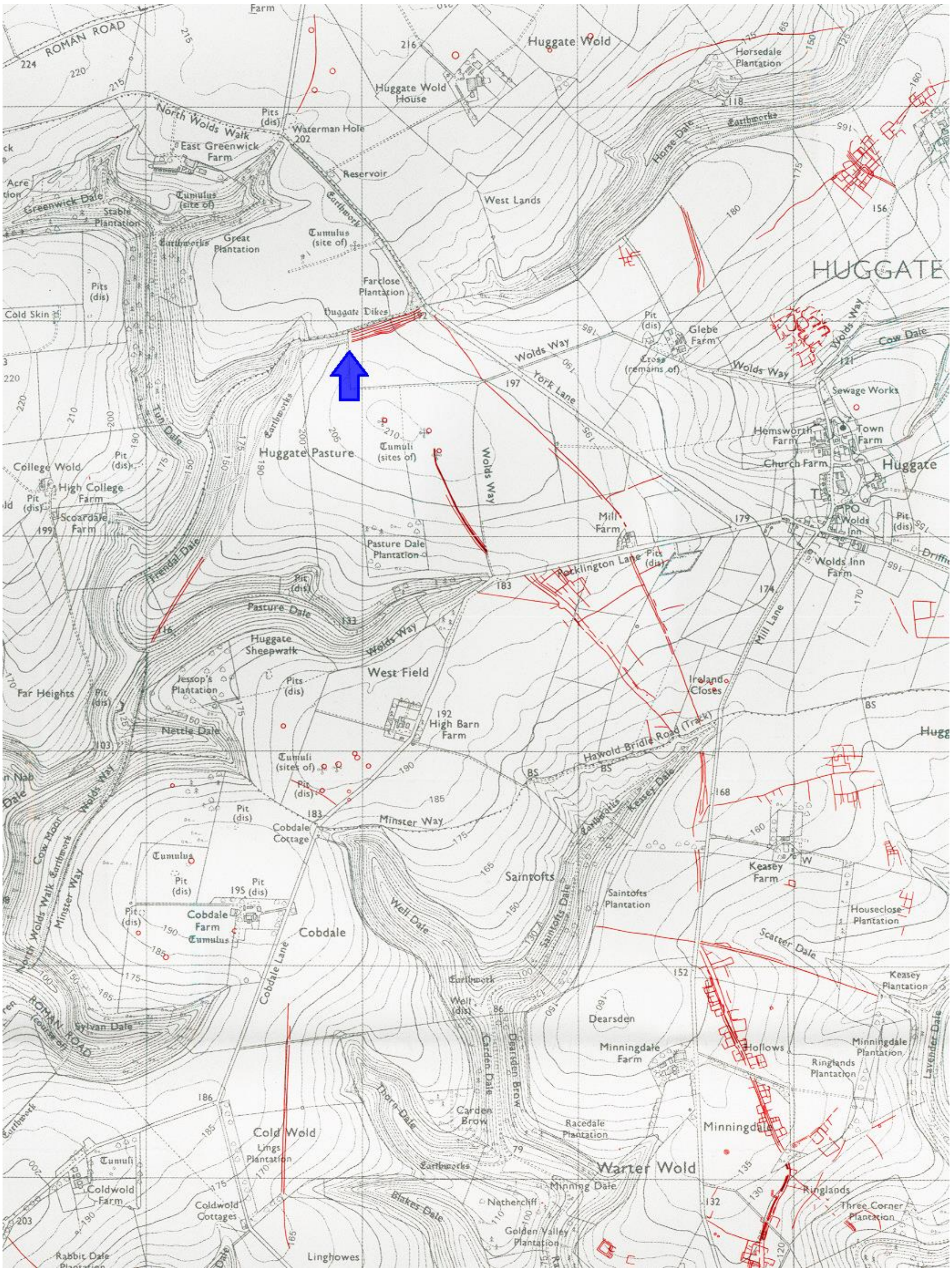


Fig 6.10 Cropmarks at and around Huggate Dykes
Cropmarks are shown in red and must be read in combination with the features mapped in black by the Ordnance Survey. Huggate Dykes is indicated by the blue arrow. (Stoertz 1997: Map 3. Contains Ordnance Survey data © Crown copyright)

a

b

Fig 6.11 Aerial photographs taken by Halkon at Huggate Dykes
The upstanding banks and ditches of the Western and Tun Dale Zones (a) looking south, and the western edge of the Western Zone (b), looking south-east. (Photographs: Peter Halkon 2010. Reproduced with permission.)

6.3 Writing a site biography

Taking a biographical approach to landscape (see Section 2.2.2), this section traces the life history of Huggate Dykes. Before the monument itself was constructed, a special place was born amidst Early Bronze Age round barrows, and a routeway across the chalk hills was formalised with a trackway. The construction of a simple linear earthwork in the Late Bronze Age further monumentalised the place and routeway, and as the monument increased in scale with the addition of further banks and ditches—material expressions of the monument's significance—the flow of movement around, along and across Huggate Dykes was controlled with a series of entrances. In the Late to Roman Iron Age, ladder settlements sprang up in the landscape to the south-east of Huggate Dykes, but the land adjacent to monument appears to have been somehow inappropriate or undesirable for further division or habitation; perhaps the monument was too cosmologically or economically relevant to too many different groups of people for the land around it to be claimed by one community. In the Anglo-Saxon period, Huggate Dykes became a funerary monument, and as the linear earthworks of the Yorkshire Wolds became absorbed into medieval and post-medieval boundary systems and road networks, Huggate Dykes remained relevant to the people living and working around it. The massive banks and ditches constituted a useful boundary between administrative divisions in the landscape, and thus they were preserved through the millennia and are, in a way, still alive.

In order to write the biography of Huggate Dykes, this project draws upon a variety of sources and techniques. Map regression and satellite imagery help to trace the preservation of the monument—and its relevant to post-medieval communities—through time, and to contextualise it within the wider landscape. Geophysical fieldwork and field visits have provided clues as to the construction sequence for the site's banks, ditches and entrances, and may provide insight into the amount of labour that was required to build them. Finally, experiential approaches to the past, both digital and in the field, have offered ways of interpreting Huggate Dykes as a place of performed actions, where people and animals would have reflexively interacted with the monument, both shaping it and being shaped by it.

6.3.1 Map regression

Huggate Dykes appears on Ordnance Survey maps from the first editions of both the Inch to a Mile (1858; Fig 6.12) and Six Inch to a Mile (1855; Fig 6.13, top) series onwards, and map regression reveals that it has dramatically shrunk in size since then, as the banks in the Eastern Zone were ploughed flat in the first half of the twentieth century. The First Edition Inch to Mile map (Fig 6.12) shows the individual banks, ditches and possible entrances within the monument, but the level of detail that can be gleaned from this map is constrained by its scale. The Six Inch series (Figs 6.13-6.15) offer more clarity and proved useful for mapping changes in the monument through the nineteenth and twentieth centuries. On the 1855 First Edition Six Inch map (Fig 6.13, top), the banks in the Eastern Zone are shown to be upstanding, and the southernmost bank has a semi-circular bank protruding from its southern side. In the Western Zone, an entrance or gap through four banks is clearly visible. A fifth bank to the south blocks this entrance; it is confined to the Western Zone and does not continue into the Eastern or Tun Dale Zones. A small bank or half-bank to the north of the banks with the entrance and the parish boundary runs through both the Western and Eastern Zones. In the Tun Dale Zone, one-and-a-half banks branch off of the monument and, moving south-west, hug the top edge of the slope down from Huggate Pasture into Tun Dale. Another bank descends midway down the slope and travels south-west, roughly parallel to the one-and-a-half banks upslope from it. Only one-and-a-half banks reach the eastern edge of the Eastern Zone, and none have been mapped immediately to the east of York Lane in the York Lane Zone (although they do appear further to the east, off the edge of Fig 6.13, top).

On the 1892 First Edition Six Inch map (Fig 6.13, bottom), the mid-slope bank in the Tun Dale Zone and the southernmost bank in the Western Zone are both shown as small or half banks. The semi-circular bank in the Eastern Zone now appears to be integrated into the southernmost bank in that zone, rather than tacked on to the southern side as in the 1855 map. The southernmost bank of the Western Zone, which was shown to block an entrance on the 1855 map, now has a gap in line with the other banks. A second gap or entrance has appeared through three of the banks near the western edge of the Western Zone, which is similar to Mortimer's plan (1905: Pl C Fig Ee; Fig 6.6b). Whilst from these maps alone it seems likely that this entrance dates to the second half of the nineteenth century, it is possible that it did exist prior to 1855 and was somehow missed by the original surveyors, or mapped incorrectly. The 1858 Inch to Mile map (Fig 6.12) appears to show an entrance or area of disturbed earthwork banks, but the lower resolution of this map means that there are other gaps in the symbol used to draw Huggate Dykes (e.g. in the southernmost bank of the Eastern Zone, or in the banks to the north of the semi-circular bank in the same zone). On the ground it is more subtle than the other entrance in the Western Zone, and thus difficult to see from the south or between the banks and ditches. Indeed, it is only when viewed from the north that the scale and layout of this entrance becomes apparent (see Section 6.3.5), and therefore it was a target area for geophysical surveys (Section 6.3.4). At the eastern edge of the Eastern Zone, the bank to the north of the parish boundary is now shown to continue to the western edge of York Lane, where it turns a right angle and follows both the road and the parish boundary. The second earthwork from the north (immediately to the south of the northernmost bank which now turns to the north at York Lane) continues eastwards beyond York Lane, and is also labelled 'Huggate Dikes' in the York Lane Zone (label cut off by the edge of Fig 6.13, bottom). The 1892 map also reveals that the northernmost bank has been planted with trees in the Eastern Zone, which is how the monument appears in the present day.

The monument appears virtually unchanged on the 1910 and 1912 Six Inch OS maps (Fig 6.14), and it is only in 1952 (Fig 6.15, top) when the first maps reveal that the banks in the Eastern Zone have been levelled. The Western, Tun Dale and York Lane Zones remain as they were on previous editions. The National Grid National Survey map (1976-1977; Fig 6.15, bottom) uses a modern hachure plan that precisely indicates the widths and slopes of the banks and ditches, rather than the simpler lines of the earlier maps, which denote only the widths or general shapes (not the slopes) of the banks; this provides the clearest depiction of the entrance in the middle of the Western Zone. The 1976-1977 map shows that the southernmost surviving bank—by now, the southernmost bank from the 1855 edition (Fig 6.13, top) has disappeared and a field boundary has appeared in its place—has southward-turning terminals at this entrance. Such a morphology is reminiscent of the earthworks at Iron Age hillforts, and thus this entrance was chosen as a target for geophysical survey (see Section 6.3.4). In contrast, the entrance at the western edge of the Western Zone appears to be more complicated on this map than on previous ones, with interwoven banks and ditches that are difficult to separate; this concords with the level of complexity seen on Halkon's 2010 aerial photos (Fig 6.11b) and reinforces the need for the integration of multiple survey techniques.

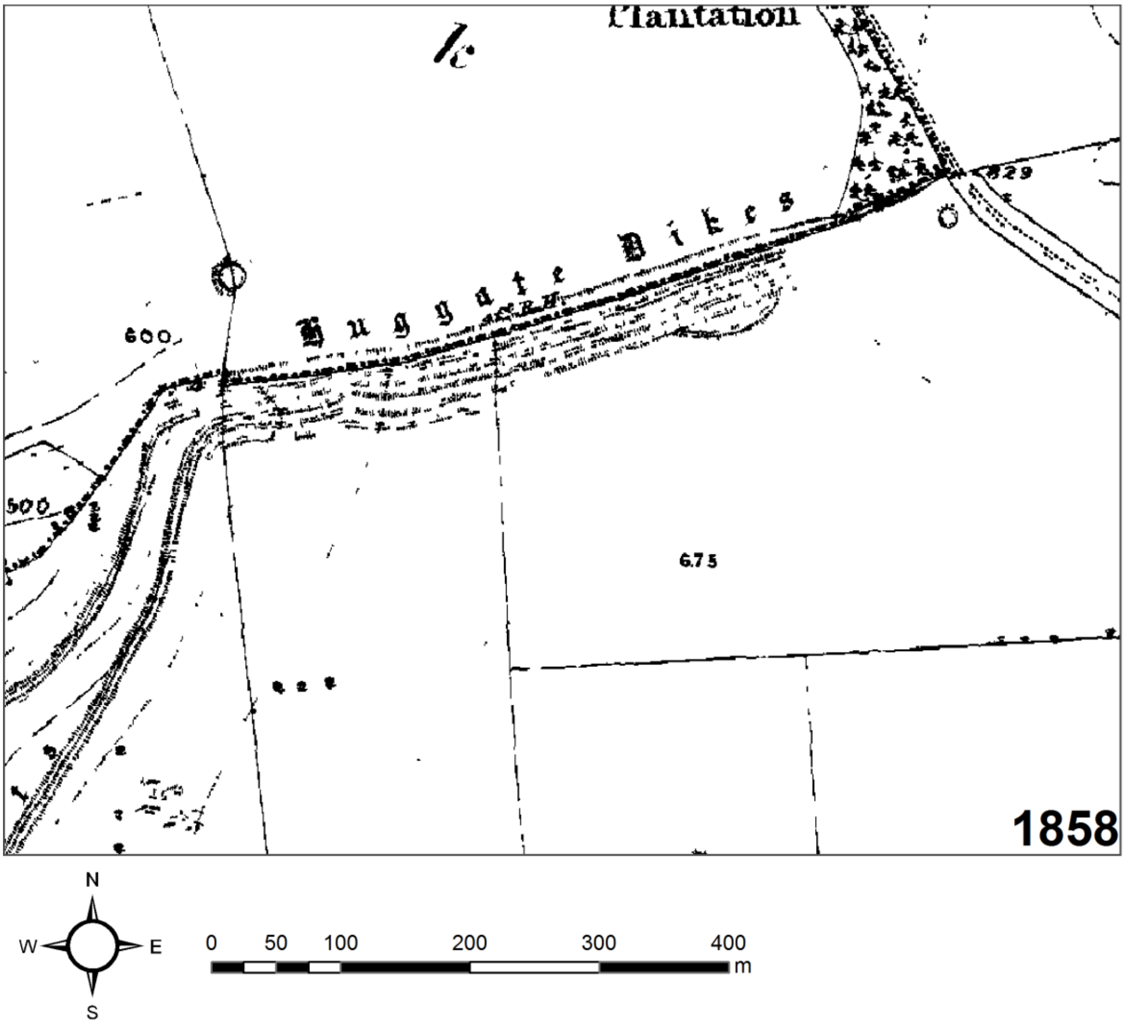


Fig 6.12 First Edition 1858 Inch to Mile OS map of Huggate Dykes
Contains Ordnance Survey data © Crown copyright.

Fig 6.13 First Edition 1855 and 1892 Six Inch OS maps of Huggate Dykes
Contains Ordnance Survey data © Crown copyright.

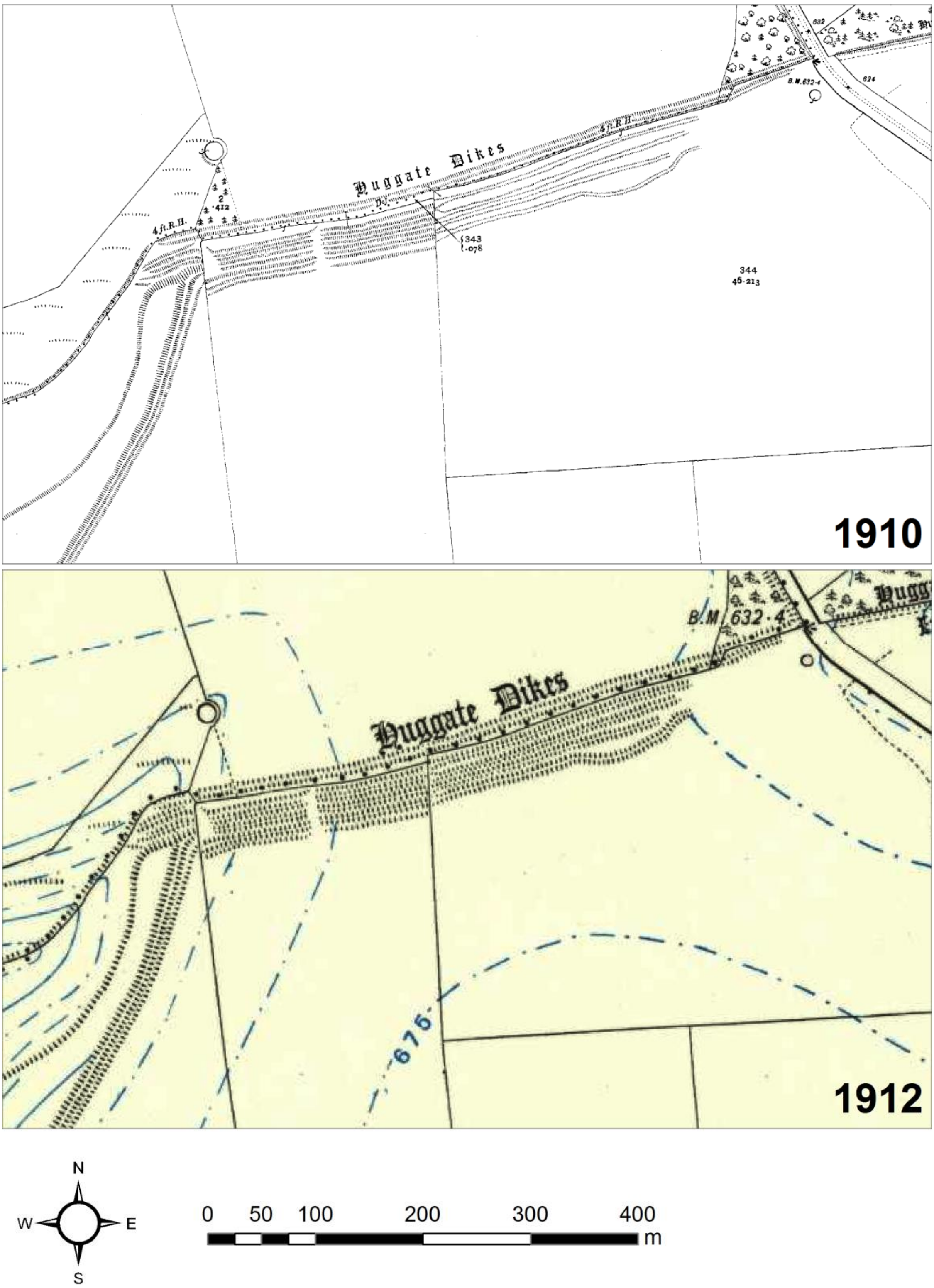


Fig 6.14 First Edition Revised 1910 and 1912 OS maps of Huggate Dykes
Contains Ordnance Survey data © Crown copyright.

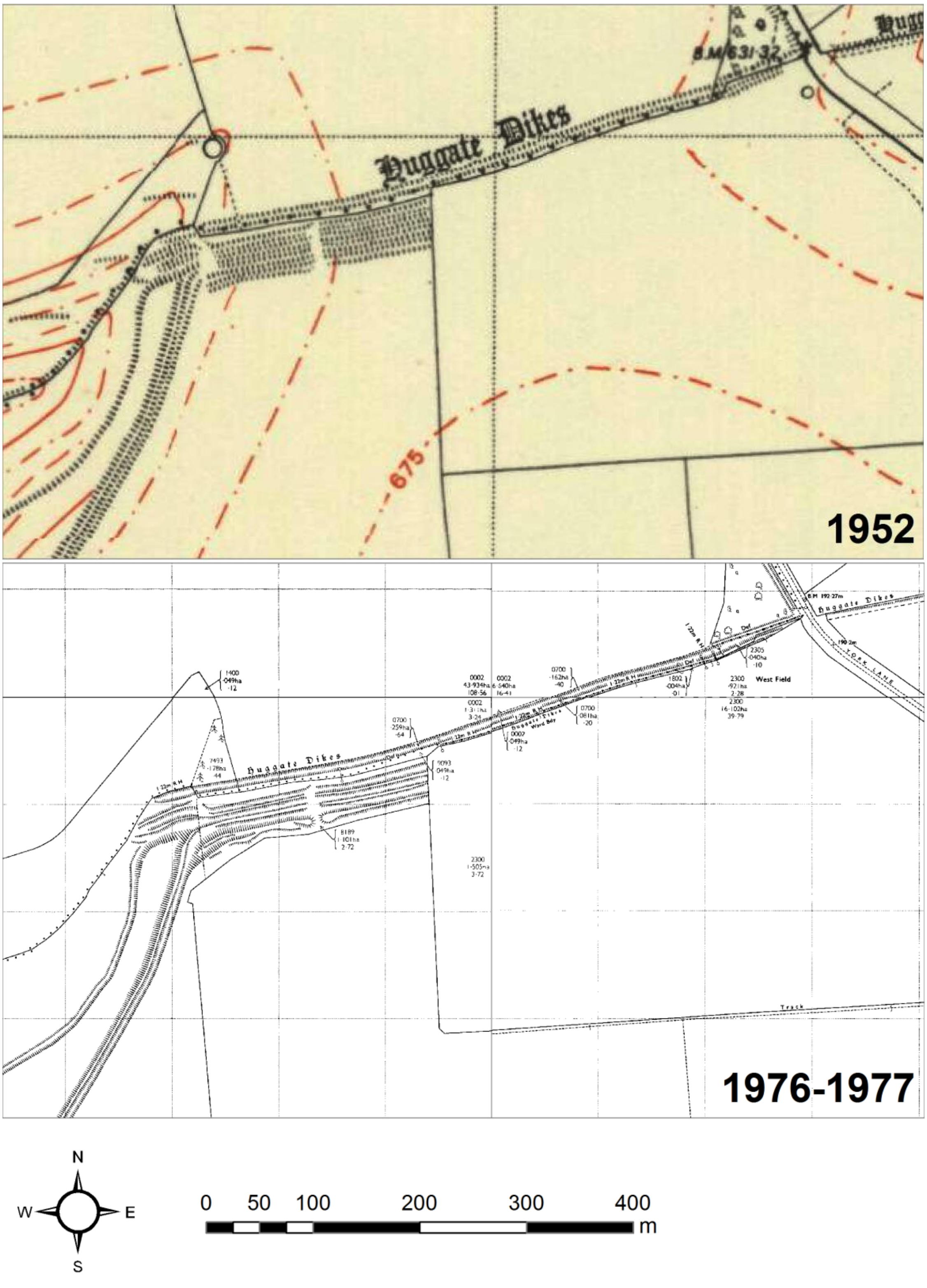


Fig 6.15 Revised 1952 Six Inch and National Grid National Survey (1:2500) 1976-1977 OS maps of Huggate Dykes

6.3.2 Experiential GIS and visual links with barrows

As Mortimer's (1905) excavations have shown, Huggate Pasture was chosen as the location for four round barrows during the Early Bronze Age, and more barrows could be found farther away from the site where Huggate Dykes would later be constructed (see Section 6.2). The concentration of barrows (Fig 6.5) on and around Huggate Pasture, Huggate Wold (to the north) and Warter Wold (to the south) would have made this part of the landscape recognisable to people moving across it in the Bronze Age, and the barrows may have been used for navigation (see Section 6.4). Due to its topographic prominence as a narrow ridge of high ground between two valleys, and due to the presence of Early Bronze Age round barrows, the stretch of land where Huggate Dykes was built is likely to have been a place, rather than a space, by the Late Bronze Age, and that place would have been laden with history. It is impossible to know whether or not the builders of Huggate Dykes believed that they had any sort of genealogical connection with the people buried in the barrows on Huggate pasture, or if they believed that there were people buried there at all; the barrows may have been perceived to be the homes of mythical beings, or even entirely natural. Nevertheless, the fact that people chose to monumentalise this place with several phases of earthwork-building (see Section 6.3.4)—which would have exceeded any practical requirement for land division or route-marking—suggests that Huggate Pasture was somehow a significant place, and the presence of Early Bronze Age barrows should be considered as a possible contributing factor.

In order to investigate potential links between Huggate Dykes and other features within the wider landscape, cumulative viewsheds were created using ArcMap (Figs 6.16-6.17) and a 50m DTM (the highest resolution available for the majority of the time during which the project was undertaken). The aim of the analysis was to map visual links between observer points along the core of the earthwork in the Western and Eastern Zones and features in the surrounding landscape (see Appendix A). The viewsheds were calculated using two different observer offset (Offset A) heights, 1.5m and 3.5m, to simulate the eye level of a person of average stature walking both on the level of the present ground surface (1.5m)—i.e. next to the monument—and 2m above the level of the present ground surface (3.5m)—i.e. on top of the banks if they had been 2m high, which is the tallest that they are likely to have been. The results (Fig 6.16-6.17) show that there is little difference between the 1.5m (light blue) and 3.5m (dark blue) observer offsets. The barrow to the north of Huggate Dykes (Mortimer [Group 14] A) sits within the viewshed at both observer heights, as do several of the barrows further to the north (Mortimer's Group 13), which would have been visible on the horizon (Fig 6.17). Tantalisingly, the Early Bronze Age round barrows immediately to the south of Huggate Dykes (Mortimer 242, 243 and 263) lie just outside the edge of the viewsheds, and therefore do not appear to have been clearly visible from the core of the monument with either observer offset (Fig 6.17). Thus, standing on top of the banks to view other features in the landscape would offer little advantage, save to circumvent the blocking of particular views by the earthworks themselves. Additionally, if linear earthworks were used as navigational aids to help travellers move through a landscape by using the best views into the distance to see what lay ahead—which is reminiscent of the Western Apache definition of wisdom as the ability to use a landscape to 'see danger before it happens' (Basso 1996: 127)—then there would be virtually no benefit to walking on top of the banks, rather than next to them.

Although the cumulative viewsheds outline above offer a model for how people may have seen the land around Huggate Dykes when walking around the core of the monument, they do not address the dynamism that is inherent in movement. In other words, the viewsheds do not consider the ways in which people would have understood the monument's context whilst they were moving *through* that context itself. The information that they provide is depicted from above and shows the sum of all visible areas on one map. When people walk through a landscape, however, they tend to see one or two views at a time, and it is only after completing a particular journey that they can combine of all views that they have seen to create a mental map of a place or route (for a discussion of different types of movement and maps, see Section 6.4, and Chapter 7). Although subsequent journeys may rely on that mental map (see Section 2.4), it is not available for the first, and individual views from particular points in the landscape along a given route may remain more memorable or culturally salient than others—a funerary monument inspiring pride in an ancestor, for example, or a battlefield representing the sorrows of a past conflict—regardless of the overall, summed mental map into which they may fit. If linear earthworks were designed to direct movement from the outset of their construction, which seems likely, then any analysis investigating the visibility of barrows and other features within the landscape around Huggate Pasture must attempt to account for that movement.

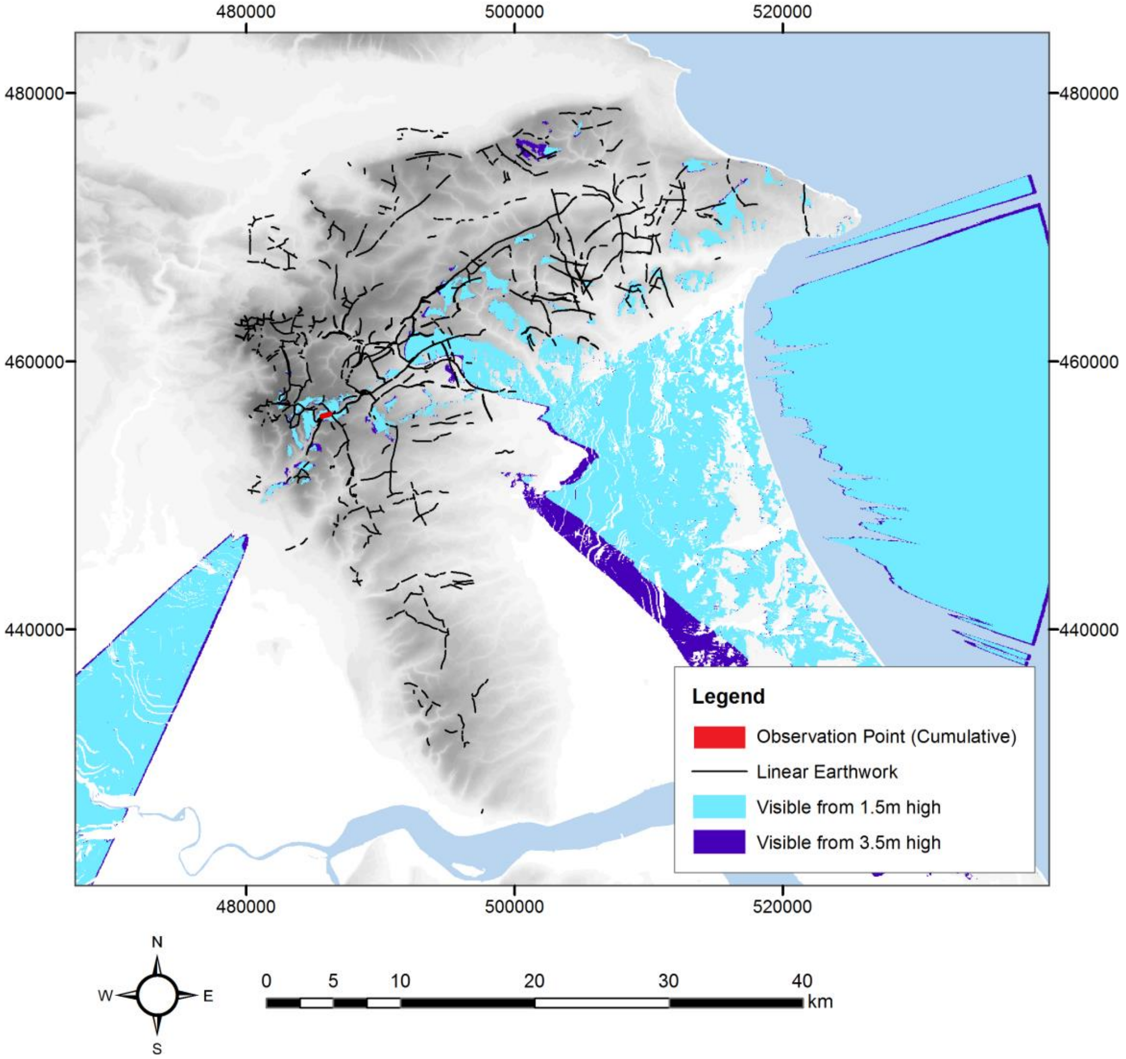


Fig 6.16 Cumulative viewshed from Huggate Dykes
Views from 1.5m above ground level are shown in light blue and views from 3.5m above ground level are shown in dark blue. Earthwork data after Mortimer (1905), Stoertz (1997), Fenton-Thomas (2011) and original work. Contains Ordnance Survey data © Crown copyright.

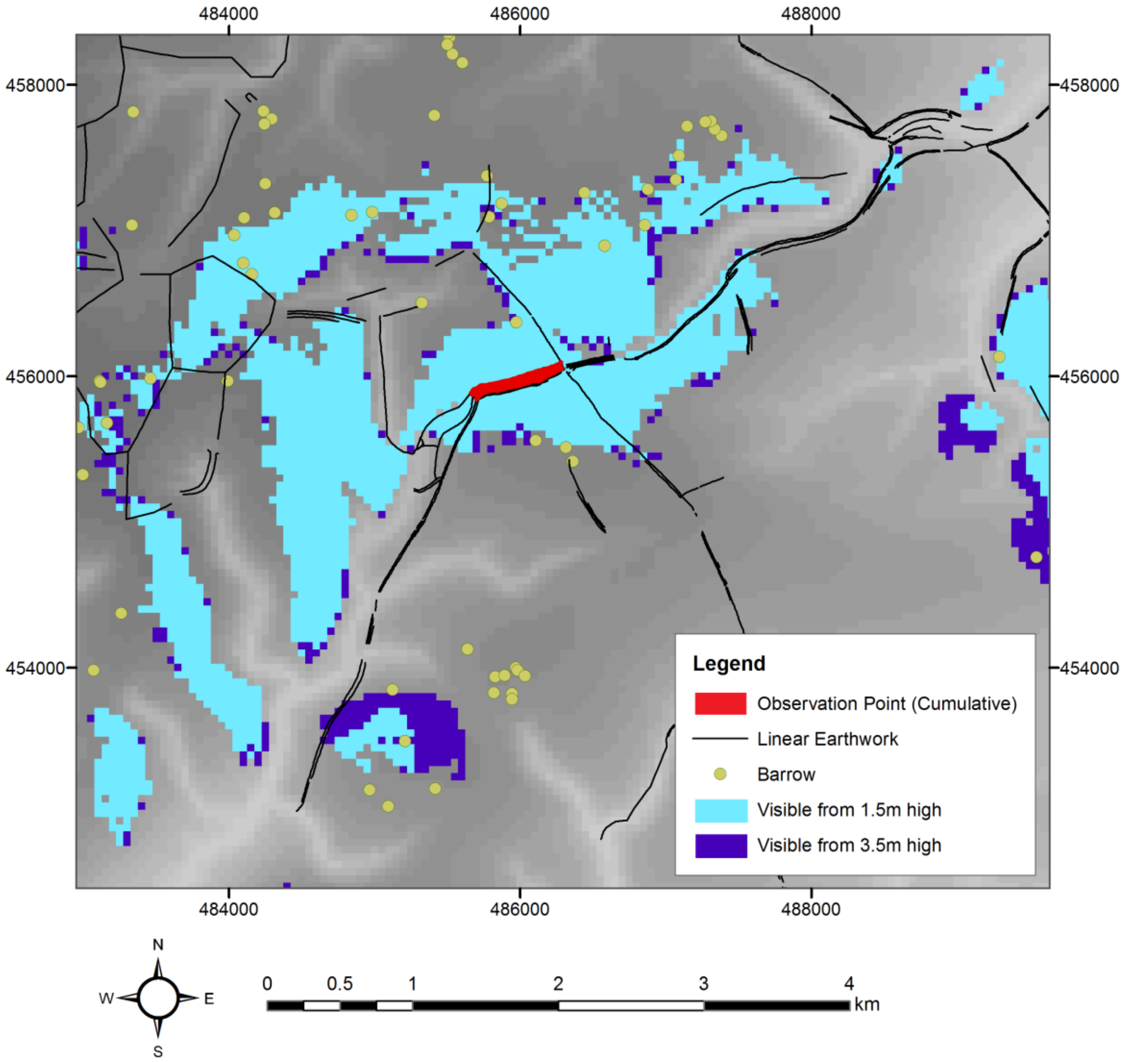


Fig 6.17 Viewshed links between Huggate Dykes and round barrows
Views from 1.5m above ground level are shown in light blue and views from 3.5m above ground level are shown in dark blue. Earthwork and barrow data after Mortimer (1905), Stoertz (1997) and original work. Contains Ordnance Survey data © Crown copyright.

In order to overcome the limitations of the static feeling of the cumulative viewsheds, a sort of digital phenomenology was used to model particular views around Huggate Dykes (Figs 6.18-6.20) in what this project has called an *experiential GIS* (using Esri ArcGlobe). Barrows (Figs 6.18-6.20, in red) were drawn to an average diameter of 20m and extruded from the globe's surface (which used built-in terrain data from Esri) to appear hemispherical. The earthworks themselves were not extruded, as they looked unrealistic; they are thus shown as flat, thin lines (Figs 6.18-6.20, in pink). An unintended consequence of not being able to satisfactorily recreate the 3D shape of the earthworks was that the experiential GIS could be used to imagine the Late Bronze Age landscape immediately before the construction of Huggate Dykes, when the already-ancient round barrows dotted the high ground on and around Huggate Pasture, and presumably marked out this land as a place, rather than a space. Viewing the landscape from as close to the ground surface as possible, it was possible to virtually walk through the land along the route of Line A and look at what travellers might have seen ahead of them before the earthworks had been constructed.

Starting to the south-west of the land where Huggate Dykes was yet to be constructed and looking roughly north-eastwards, a traveller would have walked along the western edge of what might have looked like a field of ancestors (Fig 6.18). Mortimer's Group 14 barrows would have been clearly visible to the traveller's right and up ahead, and in the distance some of the Group 13 barrows would have dotted the horizon. Moving further up the dale towards Huggate Pasture, the barrows would have come in and out of view with changes in elevation and slope (Fig 6.19). Upon reaching Huggate Pasture, the traveller could have turned round to survey these barrows again (Fig 6.20). Immediately in front of the traveller, a barrow-free space would have been noticeable on the narrowest stretch of high ground between the dales to the west and east. This space would soon be monumentalised and become Huggate Dykes.

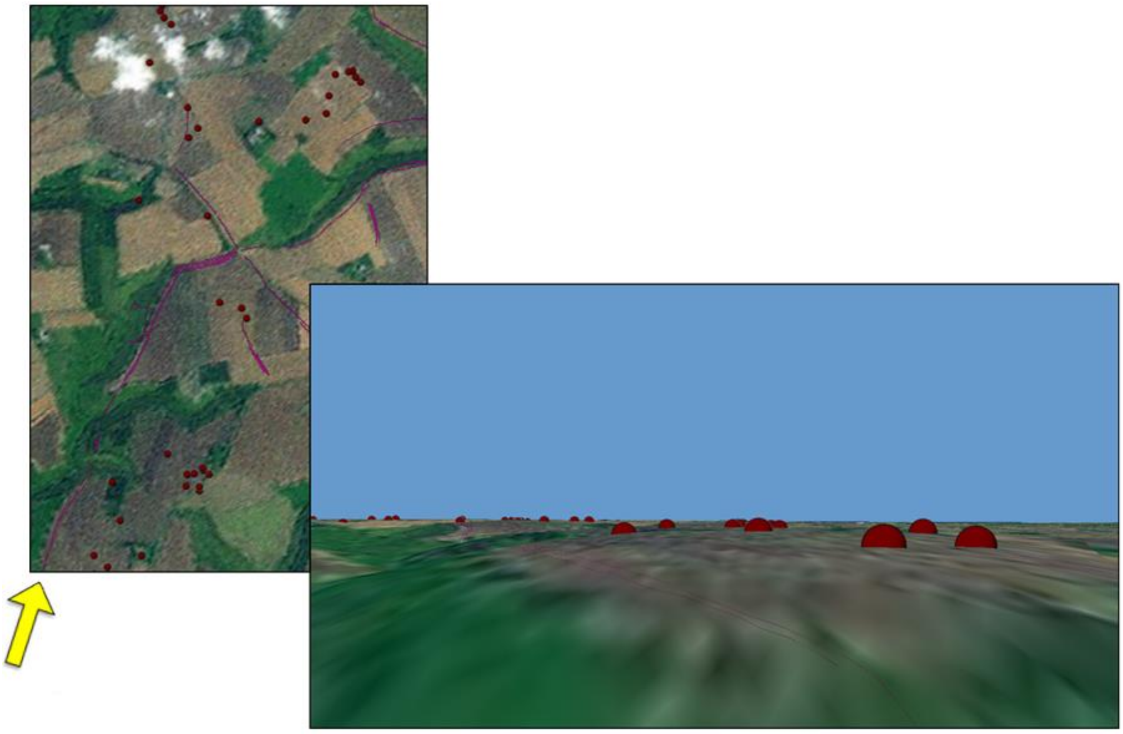


Fig 6.18 View 1: looking N-NE across a land of barrows
Earthwork and barrow data after Mortimer (1905), Stoertz (1997) and original work. Basemap and globe surface: Esri.

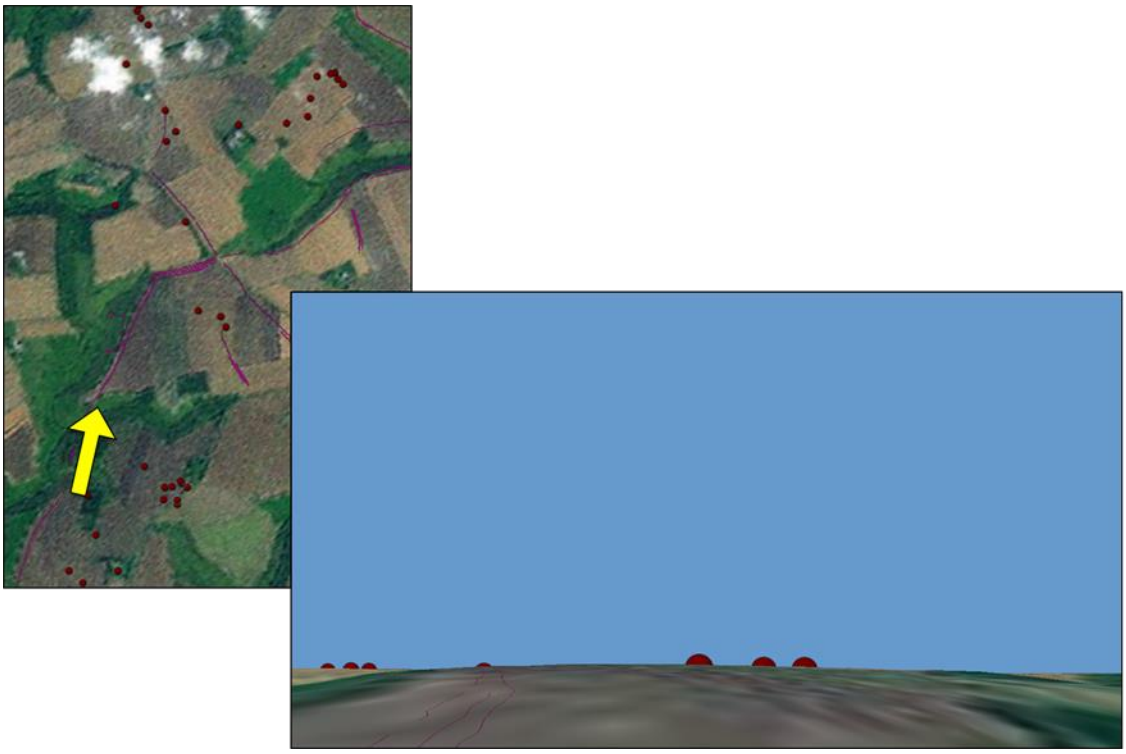


Fig 6.19 View 2: barrows disappearing and reappearing on the horizon
Earthwork and barrow data after Mortimer (1905), Stoertz (1997) and original work. Basemap and globe surface: Esri.

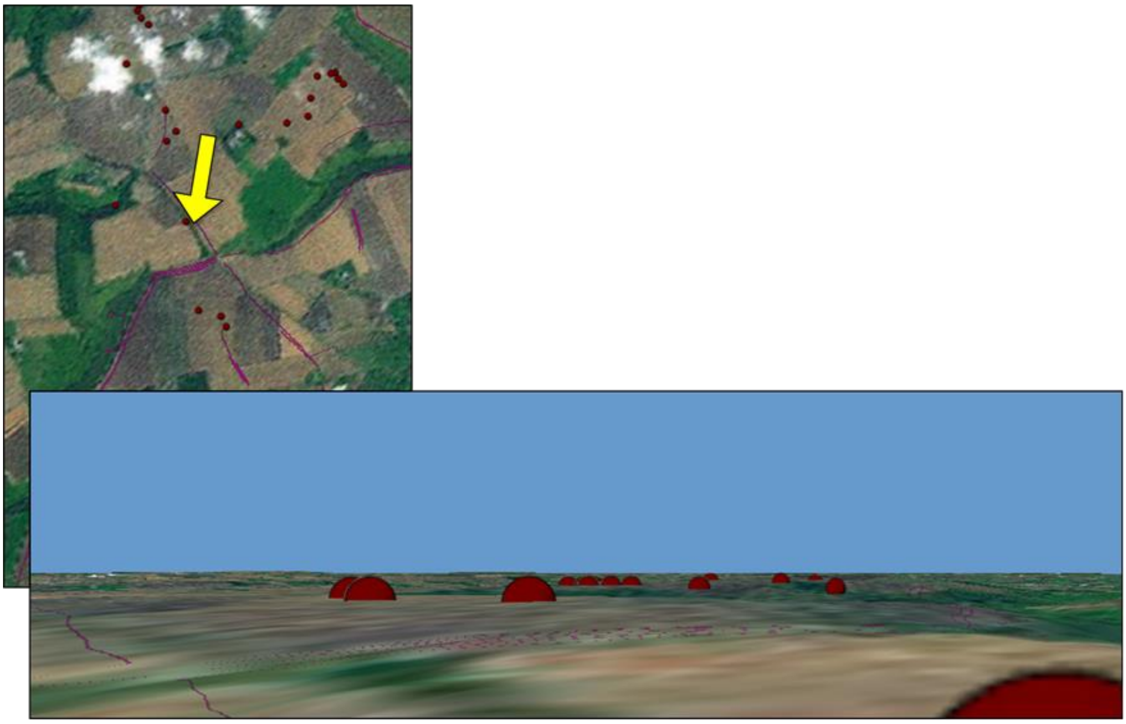


Fig 6.20 View 3: looking backward at an empty space between dales and barrows
Earthwork and barrow data after Mortimer (1905), Stoertz (1997) and original work. Basemap and globe surface: Esri.

This simulated journey highlights how remarkable a particular barrow or group of barrows might have looked to the people moving through the landscape around Huggate Pasture in the Bronze Age, and how traditional GIS analyses may be complemented with experiential approaches in order to bring a human dimension to the computer-generated results. The majority of the Early Bronze Age barrows around Huggate Dykes have been severely plough-damaged and are virtually imperceptible on the ground today, so the ability to recreate them digitally allows users to wander around a landscape that is no longer possible to visit in person. The addition of high-quality satellite imagery and georeferenced aerial photography, available through platforms such as Google Earth, can also provide insight into how linear earthwork landscapes developed, and how people might have experienced particular earthworks within their wider landscape contexts.

6.3.3 Satellite imagery

As at Wetwang-Garton Slack, this project used Google Earth to investigate cropmarks at and around Huggate Dykes (Fig 6.21). Although virtually no new linear cropmarks (in contrast to the area to the south of Wetwang-Garton Slack; see Chapter 5) were discovered using satellite imagery, this resource was useful to identify specific targets within the core of the monument to investigate with geophysical surveys (Figs 6.22-6.23). In particular, three dark cropmarks in the Eastern Zone were of interest (Figs 6.22-6.23). The largest of these is located immediately to the north of the semi-circular bank at the southern side of the monument, in a position where a round barrow or other prehistoric feature might have been. The curve of this bank appears to reference or enclose something—like the re-cut of Main Ditch 1 around an Early Bronze Age round barrow in Wetwang-Garton Slack (Chapter 5)—and yet previous studies and map regression have not identified anything. Although these three cropmarks in the Eastern Zone could be caused by geology, unmapped chalk extraction pits or redeposited ditch fills spread across the flattened banks by ploughing, the possibility that they might be archaeological features meant that they were prioritised during the geophysical fieldwork (Fig 6.24).

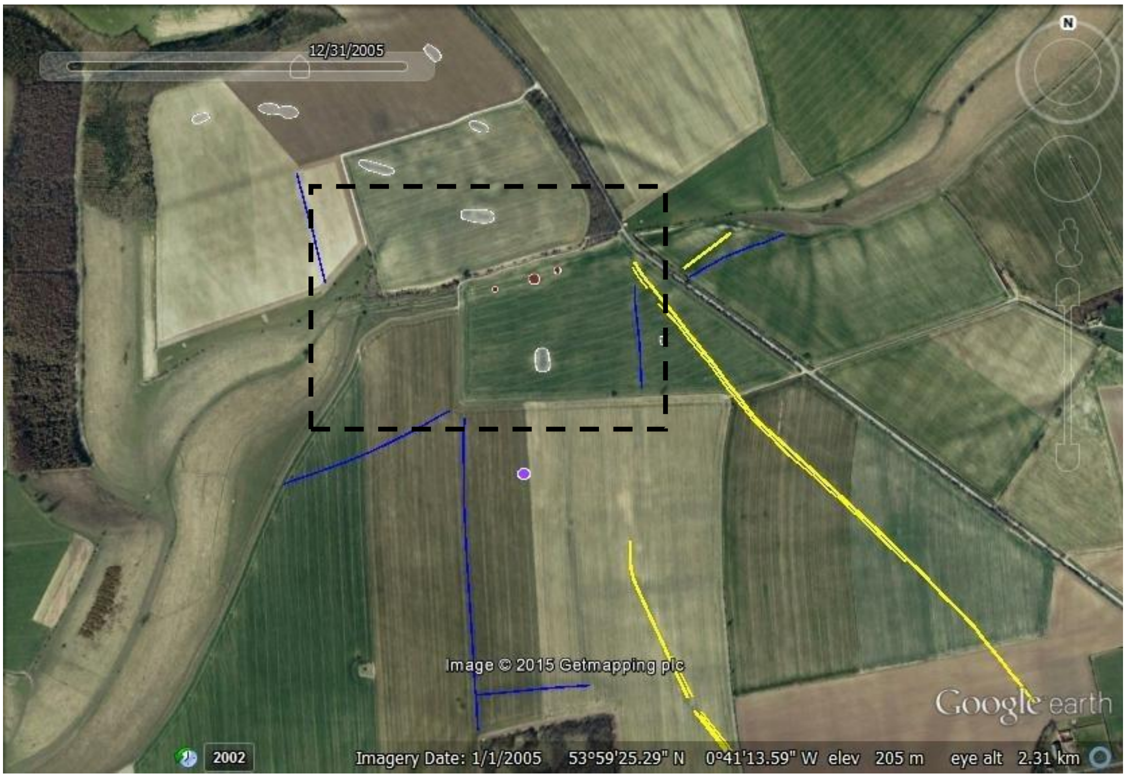


Fig 6.21 Digitised cropmarks around Huggate Dykes
Known earthworks are shown in yellow (excluding Huggate Dykes and the rest of Line A, which are not drawn), and known/possible field boundaries are blue. The only round barrow visible (Mortimer 242) is purple and chalk extraction pits (marked as such on OS maps) are white. There are three dark areas in the Eastern Zone of Huggate Dykes, marked in red. The dark areas appear in Figs 6.22 and 6.23; the extent of these two figures is shown by the dashed black line. Satellite imagery from Google Earth © 2015 Getmapping plc.

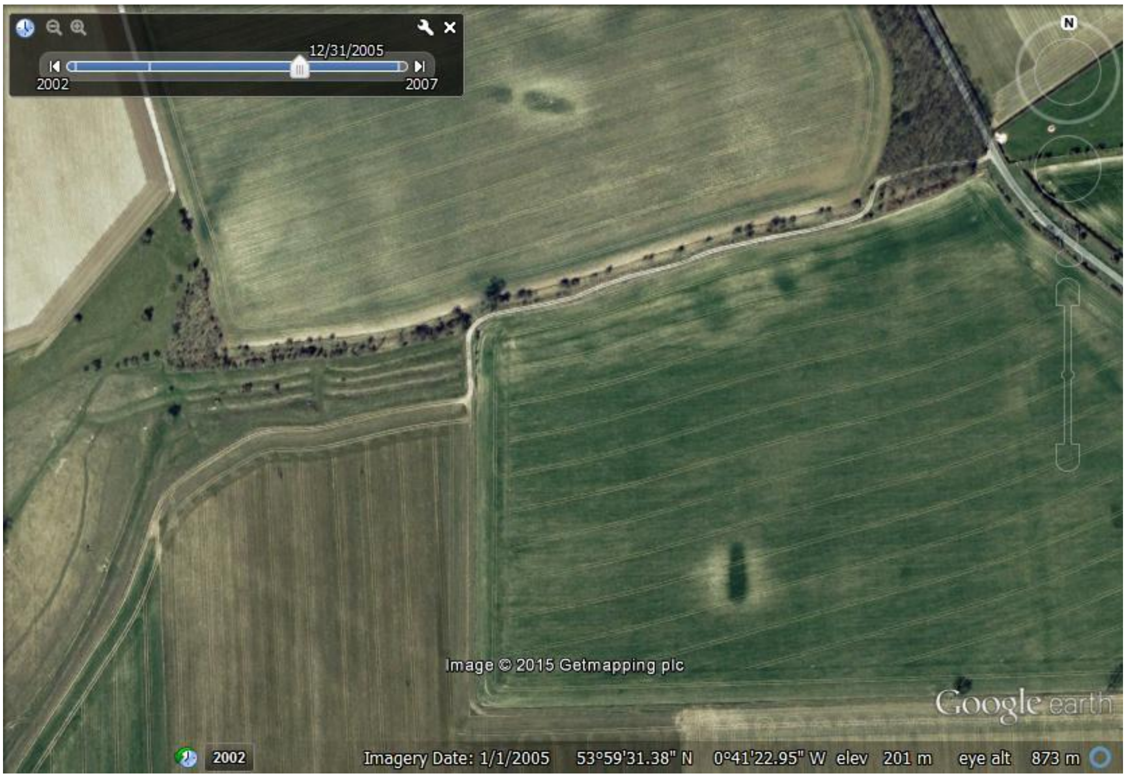


Fig 6.22 Cropmarks in the core area of Huggate Dykes
Extent is the same as Fig 6.23 and is indicated by the dashed black line on Fig 6.21, Satellite imagery from Google Earth © 2015 Getmapping plc.

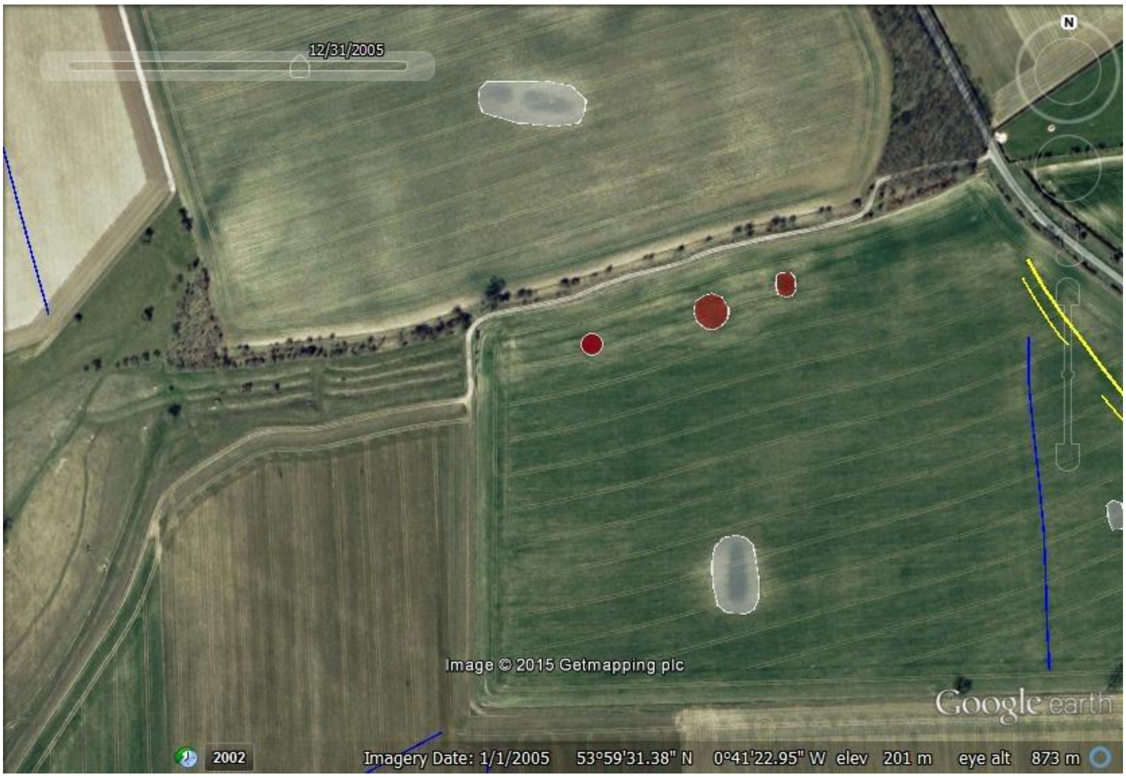


Fig 6.23 Digitised cropmarks in the core area of Huggate Dykes
Three dark areas (in red) appear in the Eastern Zone of the monument. A linear earthwork or trackway running south-east from the eastern edge of the Eastern Zone is marked in yellow. Linear cropmarks thought to be field boundaries are shown in blue. Chalk extraction pits to the north and south of the monument are shown in white. Extent is the same as Fig 6.22 and is indicated by the dashed black line on Fig 6.21, Satellite imagery from Google Earth © 2015 Getmapping plc.

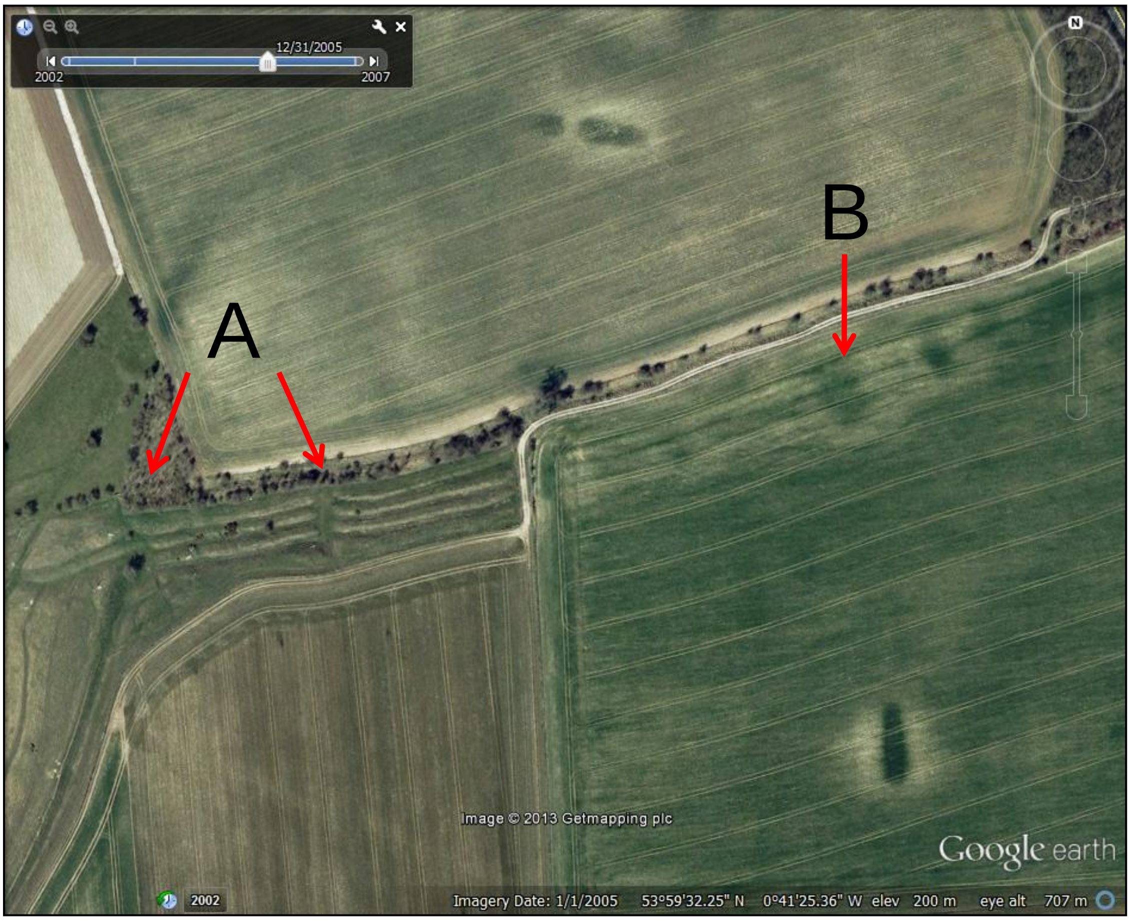


Fig 6.24 Google Earth imagery showing targets chosen for geophysical survey
The geophysical fieldwork aimed to investigate the two Western Zone entrances (A) and a particularly intriguing dark cropmark (B) located immediately to the north of the semi-circular bank in the Eastern Zone. Satellite imagery from Google Earth © 2015 Getmapping plc.

6.3.4 Geophysical fieldwork

In the winter of 2013/2014, a campaign of target geophysical fieldwork was conducted at Huggate Dykes, with the aim of obtaining high-resolution data that could clarify the morphology and phasing of the monument. The fieldwork was a joint project between staff and students at the University of Bradford and the University of Hull, with the author as the lead investigator. A total of 1.7ha split into three areas (Fig 6.25) across the 3.6ha core of site was surveyed with magnetometry, earth resistance (resistivity) and EM (see report, Fioccoprile et al. 2015, in Appendix D). Area 1 was located on top of the dark cropmarks in the Eastern Zone (Fig 6.24; see above); it was initially intended to cover the entire Eastern Zone, but the area that could be covered by the geophysical team was restricted to two-thirds of the field due to a combination of bad weather, equipment failure and the inability to secure an extension from the landowner (it was possible to extend the survey dates in Areas 2 and 3, as they were under the care of another landowner). Magnetometry proved effective in Area 1 and was the predominant technique used there (Figs 6.25-6.26). Area 2 targeted the entrance in the centre of the Western Zone, covering banks, ditches and the gap or causeway between them. Magnetometry was attempted in this area, but the steep banks and ditches made it difficult, and further equipment failure meant that this technique was abandoned. Earth resistance worked well in Area 2, and therefore it was also applied to Area 3 (Figs 6.25-6.26), which was located across the possible entrance at the western end of the Western Zone. The results of the EM surveys in Areas 1 and 3 concurred with the resistance data but archaeological features were slightly more difficult to see, so they are not illustrated here (see Appendix D). The banks were assigned the feature numbers B1-B6, and the ditches were numbered D1-D9 (Fig 6.27); one of the ditches, ?D8, appears more like a depression or hollow than a ditch when viewed on the ground, but has been considered with the others.

Fig 6.25 Areas 1-3 at Huggate Dykes
Satellite imagery: Esri.

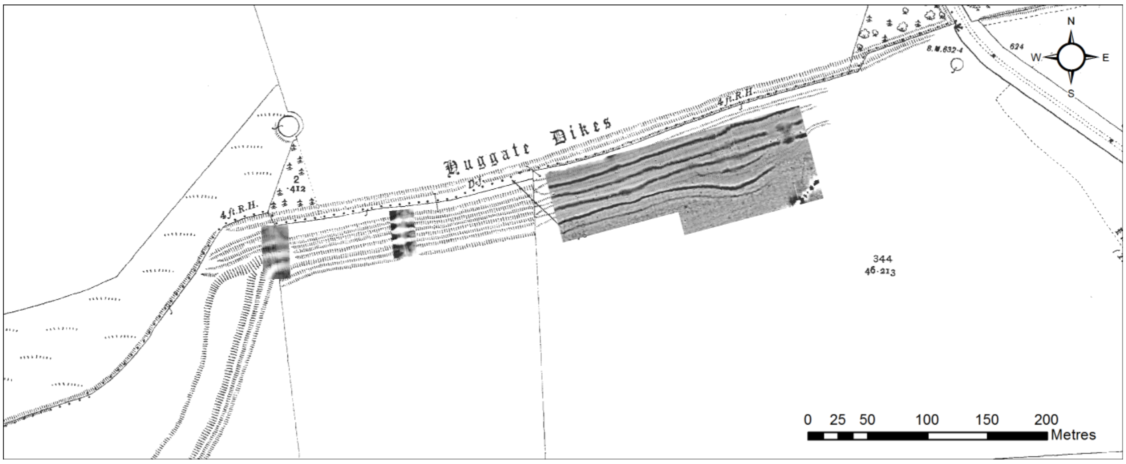


Fig 6.26 Geophysical results across Areas 1-3
Area 1 shows magnetometry data and Areas 2-3 show resistance data. For both techniques, black values are high and white are low; thus, the ditches (highly magnetic and having low resistance) are represented as black in Area1 and white in Areas 2-3. Contains Ordnance Survey data © Crown copyright.

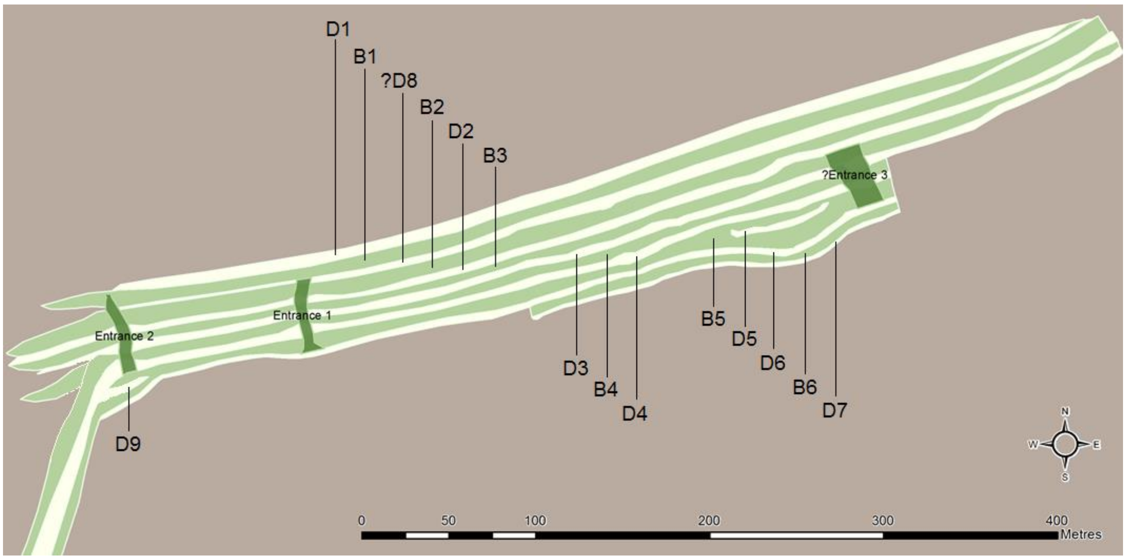


Fig 6.27 Plan of banks, ditches and entrances
Based on geophysical surveys and supported by map regression and aerial photography. Plan shows: banks B1-B6, ditches D1-D9 (including possible ditch ?D8) and entrances 1-?3.

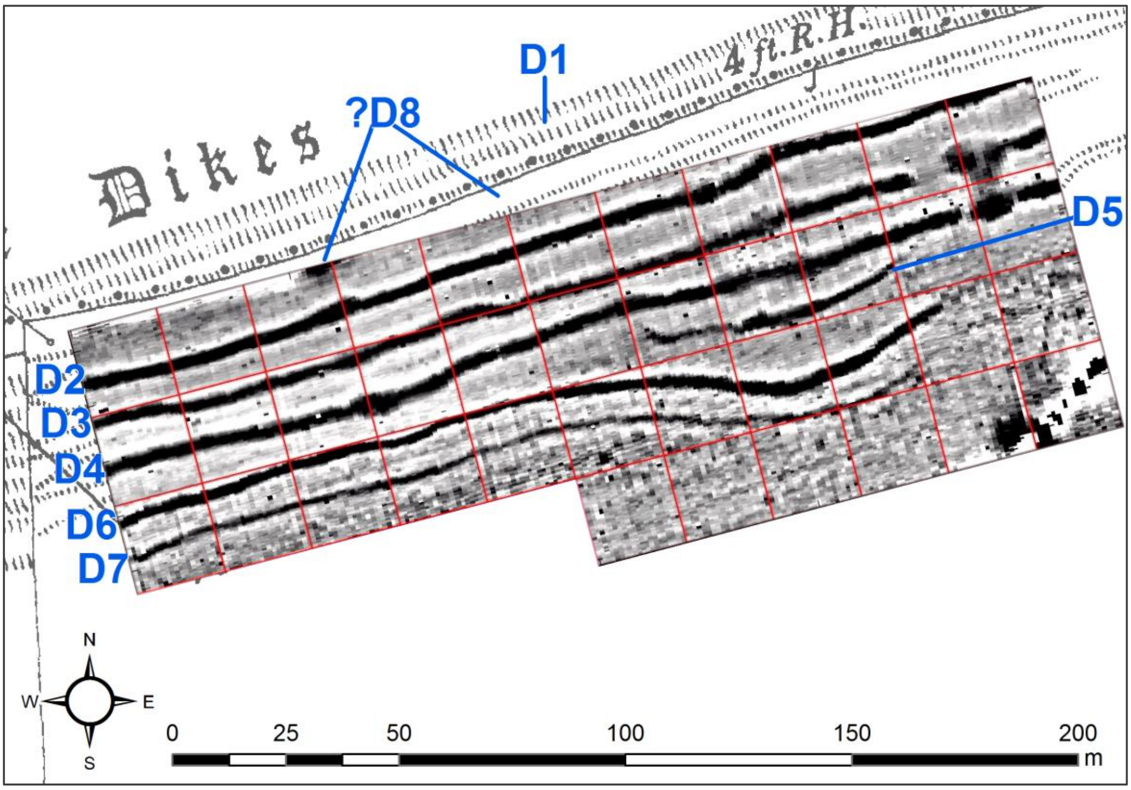


Fig 6.28 Magnetometry results from Area 1
Black responses are high and white are low. Ditches, including those known not covered by the survey, are marked in blue, and the geophysical grid is shown in red. Results are displayed overlying the 1910 Six Inch Revised OS Map. Contains Ordnance Survey data © Crown copyright.

6.3.4.1 Area 1

The magnetometry results from Area 1 (Fig 6.28) reveal that although the monument has been flattened in the Eastern Zone (Fig 6.29), the ditches survive below the present ground surface. The magnetic responses of the banks are not distinguishable from the ground surrounding Huggate Dykes, and thus their presence has been inferred from locations and shapes of the ditches, in combination with map regression. The magnetic responses of the ditches vary not only between different ditches—i.e. one ditch being more magnetically enhanced than another—but also along the length of each ditch—i.e. having stronger magnetic responses in the east than in the west, or vice versa. The top of Area 1 (north-west edge) caught the edge of a possible ditch to the south of the farm track (?D8), but as such a small portion of this feature is represented, very little information about it can be gleaned. Six further ditches (D2-D7), including three which curve to the south-east (D5-D7), are clearly visible. Between those three curving ditches, two banks are inferred to have existed, including one to the south of D6 that does not appear on early

OS maps like the one between D4 and D6 (which is bisected by D5). This seems to be a continuation of the southernmost bank in the Western Zone, which blocks the Western Zone central entrance on the 1855 Six Inch OS map and which is now a field boundary. D2 and D6 were the most magnetically enhanced of the six ditches covered extensively by the survey (marginally more-so than D3 and D4).

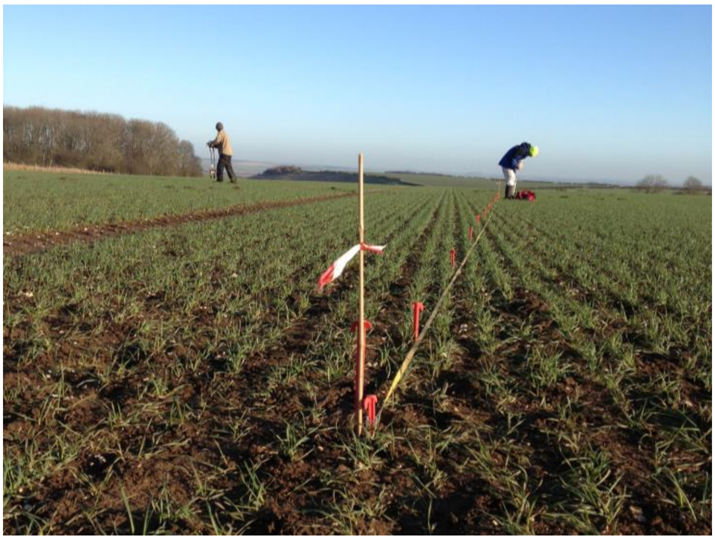


Fig 6.29 Flat field in Area 1, conducive to geophysics
Dr Chris Gaffney and Alex Corkum (University of Bradford) are shown hard at work in Area 1. (Photograph: author)

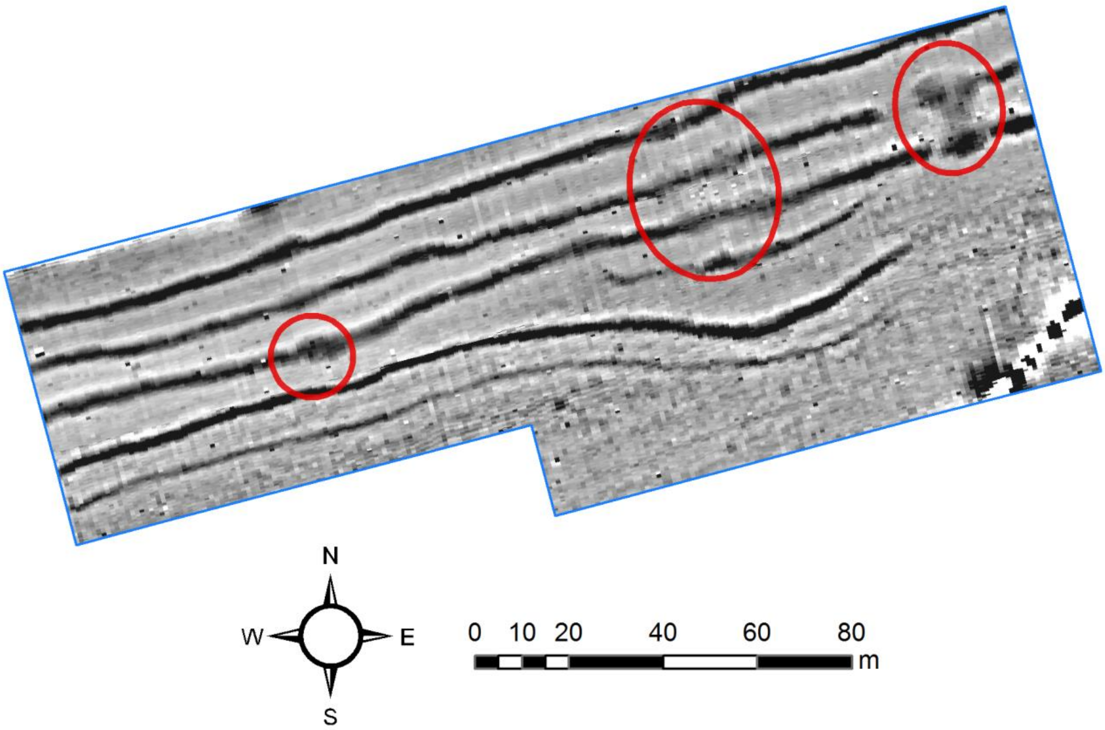


Fig 6.30 Georeferenced magnetometry results (-3 to 3 nT) overlain by Google Earth cropmarks
The extents of the three dark cropmarks (see Figs 6.21-6.24) are shown in red. They appear to match portions of the ditches which are distinct (magnetically and morphologically different; they are wider than the ditch segments immediately on either side of them, and they are visually fuzzy). The easternmost cropmark is located in the same place as what look like ditch terminals and an unknown entrance.

D2, D3 and D4 are not only morphologically similar—lacking a distinct southwards, semi-circular curve—but sections of these ditches are also characterised by blurred magnetic responses, where they appear wider and fuzzier. There are three of these blurred areas (westernmost area: D2-D4; centre area: D3-D4, and possibly D2 and D5; easternmost area: D3-D4; Fig 6.30), and they occur in almost exactly the same locations as the dark cropmarks from the Google Earth imagery (see Section 6.3.3). These have been interpreted as either differential ditch fills or areas of differential construction (e.g. areas where ditch segments have been joined up during the construction phase). Although it is possible that they reflect plough damage and the spreading of ditch material, the presence of a roughly 8m-wide gap in D3, and possibly D4, in the easternmost blurred area suggests that they may represent ditch terminals, which would make the gap a formal entrance, or connections between ditch segments, which could have been excavated by different people or from different directions.

6.3.4.2 Area 2

Prior to the geophysical fieldwork, the author hypothesised that the entrance in Area 2 (Fig 6.31) might have been an original feature of the monument's design, or a prehistoric modification at the least. The resistance survey across the entrance (Figs 6.32-6.33) found evidence that D2-D4 were once continuous, or near continuous, in this area, and that they survive underneath the causeway which now allows access in a N-S direction across the monument. These ditches were visible as three linear areas of low resistance (Fig 6.33, in white); D3 appeared to be continuous, whereas D2 and D4 may have small gaps in them, in line with the extant entrance. As with the eastern blurred area in Area 1, these may be ditches that were dug in segments and joined up, but further geophysics or excavation would be needed to confirm this hypothesis. The key finding from the fieldwork conducted in Area 2 is the phasing implied by the infilling of these ditches to create an entrance causeway, which is explored below (see Section 6.3.4.4).

Fig 6.31 Entrance in Area 2
Walking through the Entrance in Area 2, it becomes evident that the causeway is slightly curved, rather than straight. Viewed from the top of western terminal of the southernmost bank, the causeway can be seen to veer off to the right (NE). The extent to which this curving entrance is the result of historic or modern patterns of movement was a question posed before—and subsequently answered by—the geophysical fieldwork. (Photograph: author)

Fig 6.32 Resistance survey in Area 2
Dr Chris Gaffney (University of Bradford) surveys the difficult banks and ditches flanking the entrance. (Photograph: author)

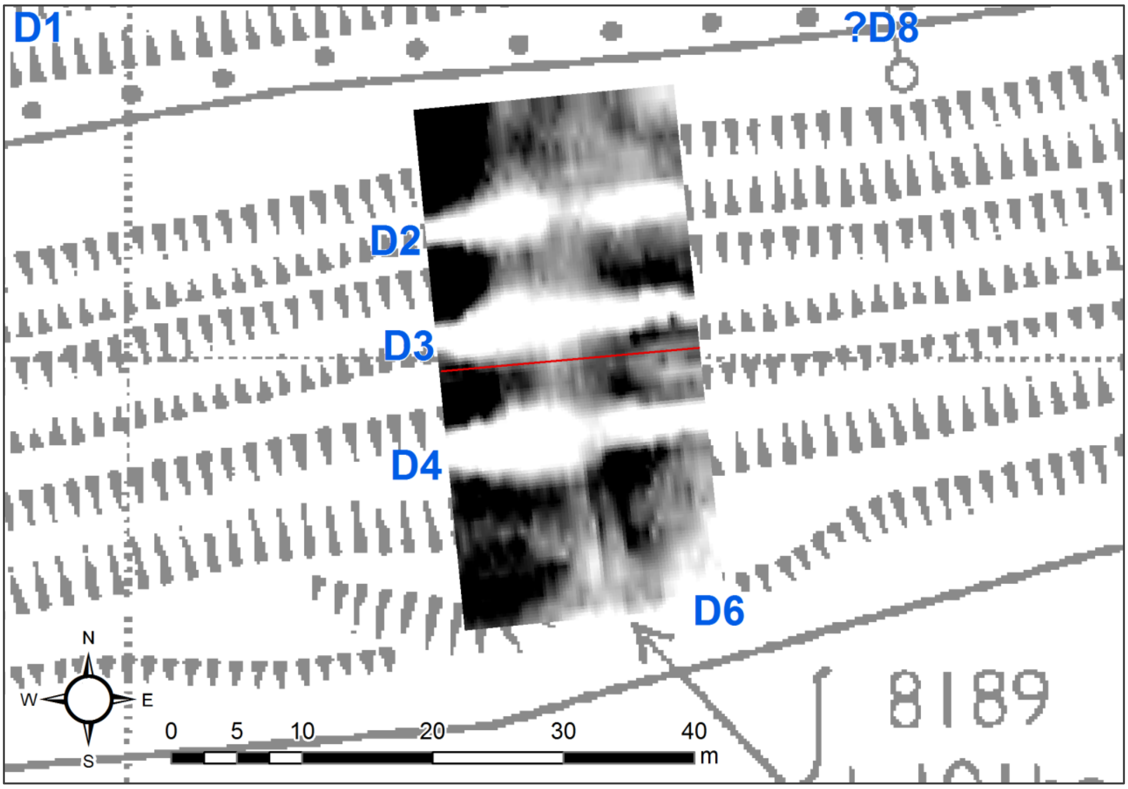


Fig 6.33 Resistance results from Area 2
Black responses are high and white are low. Ditches, including those known not covered by the survey, are marked in blue, and the geophysical grid is shown in red. Results are displayed overlying the 1976-1977 National Grid National Survey OS Map. Contains Ordnance Survey data © Crown copyright.

6.3.4.3 Area 3

The entrance in Area 3 is slightly less clear on the ground than the entrance in Area 2 (Fig 6.34), so it was hoped that geophysical survey could help to create a better plan of the feature (Fig 6.35). As in Area 2, D2-D4 originally continued underneath the present-day causeway of the entrance (Fig 6.36, shown in white). These are the same ditches as in Area 2, but here they all appear to be continuous, with no evidence for terminals or segments. The southernmost of the three ditches, D4, turns southwards at the south-west corner of the entrance and continues into the Tun Dale Zone along the top of the slope (Fig 6.36, bottom). An area of low resistance running roughly perpendicular to D2 coincides with the location of a path, which passes through a farm gate where the parish boundary dog-legs to the north-west (Fig 6.36, top). The ditch or depression D9 to the south of D4, which is evident on the ground, does not appear to have been picked up by the survey.

Fig 6.34 Entrance in Area 3
Looking NE from the SW corner of the entrance. (Photograph: author)

Fig 6.35 Resistance survey in Area 3
John Deverell (University of Hull) and the author assist Alex Corkum (University of Bradford) at the western entrance. (Photograph: author)

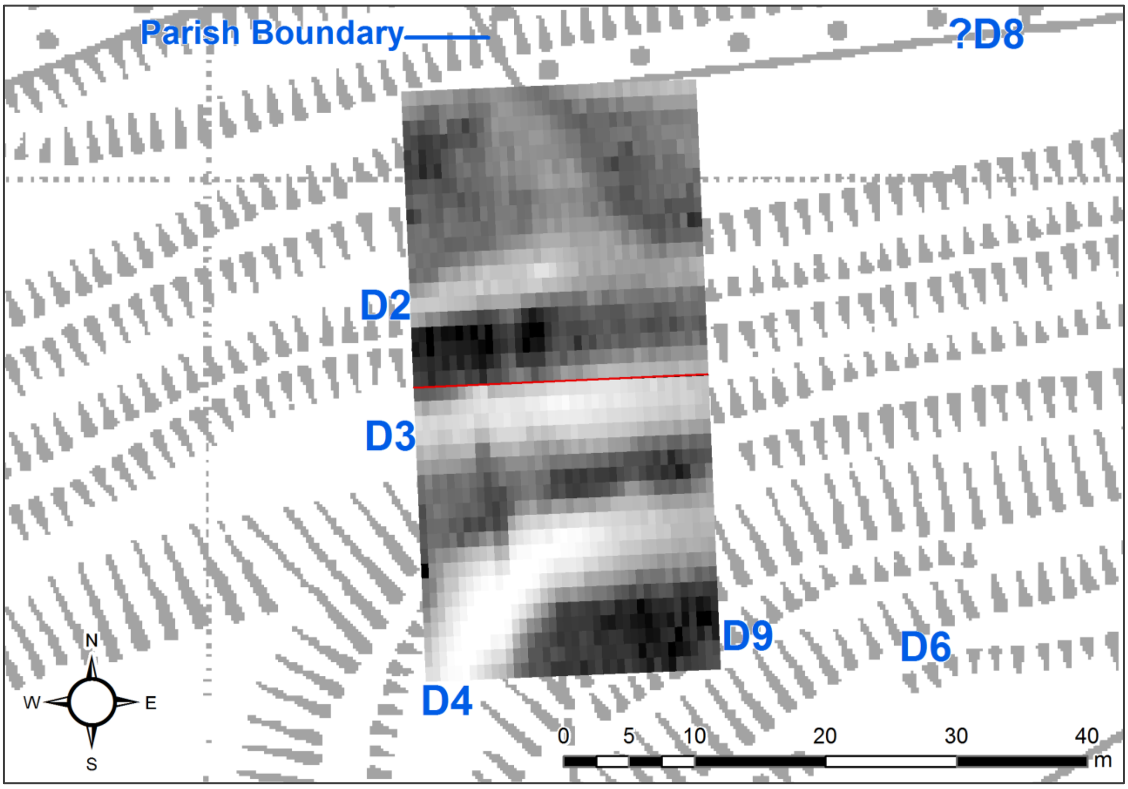


Fig 6.36 Resistance results from Area 3
Black responses are high and white are low. Ditches, including those known not covered by the survey, are marked in blue, and the geophysical grid is shown in red. Results are displayed overlying the 1976-1977 National Grid National Survey OS Map. Contains Ordnance Survey data © Crown copyright.

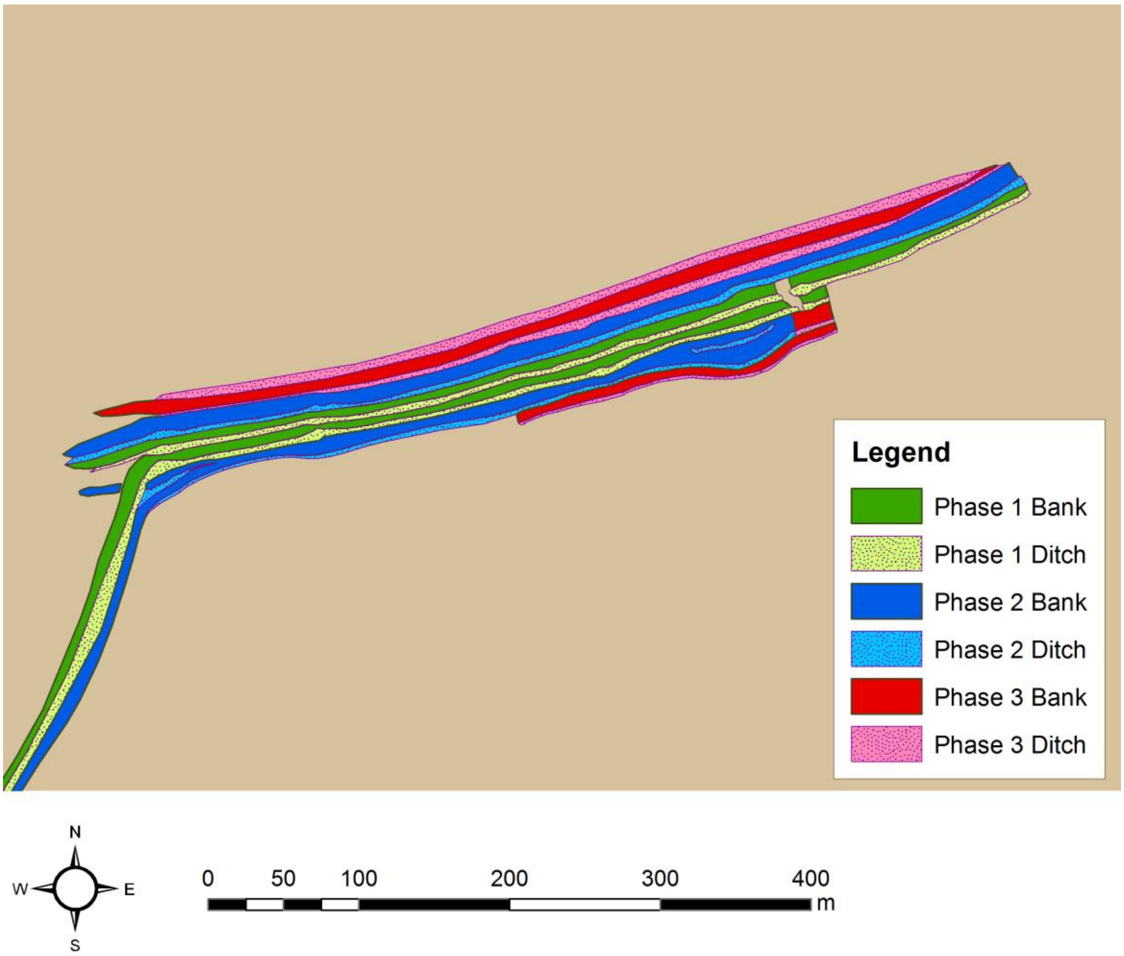


Fig 6.37 Phased banks and ditches
Based on geophysical surveys and supported by map regression and aerial photography.

6.3.4.4 Phasing model

The results of the geophysical surveys (Appendix D) reveal that Huggate Dykes has six banks (B1-B6), up to nine ditches (D1-D9) and up to three entrances (1-?3; Fig 6.27), constructed over at least three phases (Fig 6.37). It is unclear exactly how long each of these phases may have lasted, although a relative sequence bracketed by broad chronological periods (e.g. the Late Bronze Age) can be proposed. These phases may have had several construction events within them; for example, if two bank and ditch pairs were added during a phase, the pairs need not have been built in the same season, or even the same year. The shifts between phases represent changes in the ways that the monument was used—specifically, allowing different patterns of movement—rather than single events.

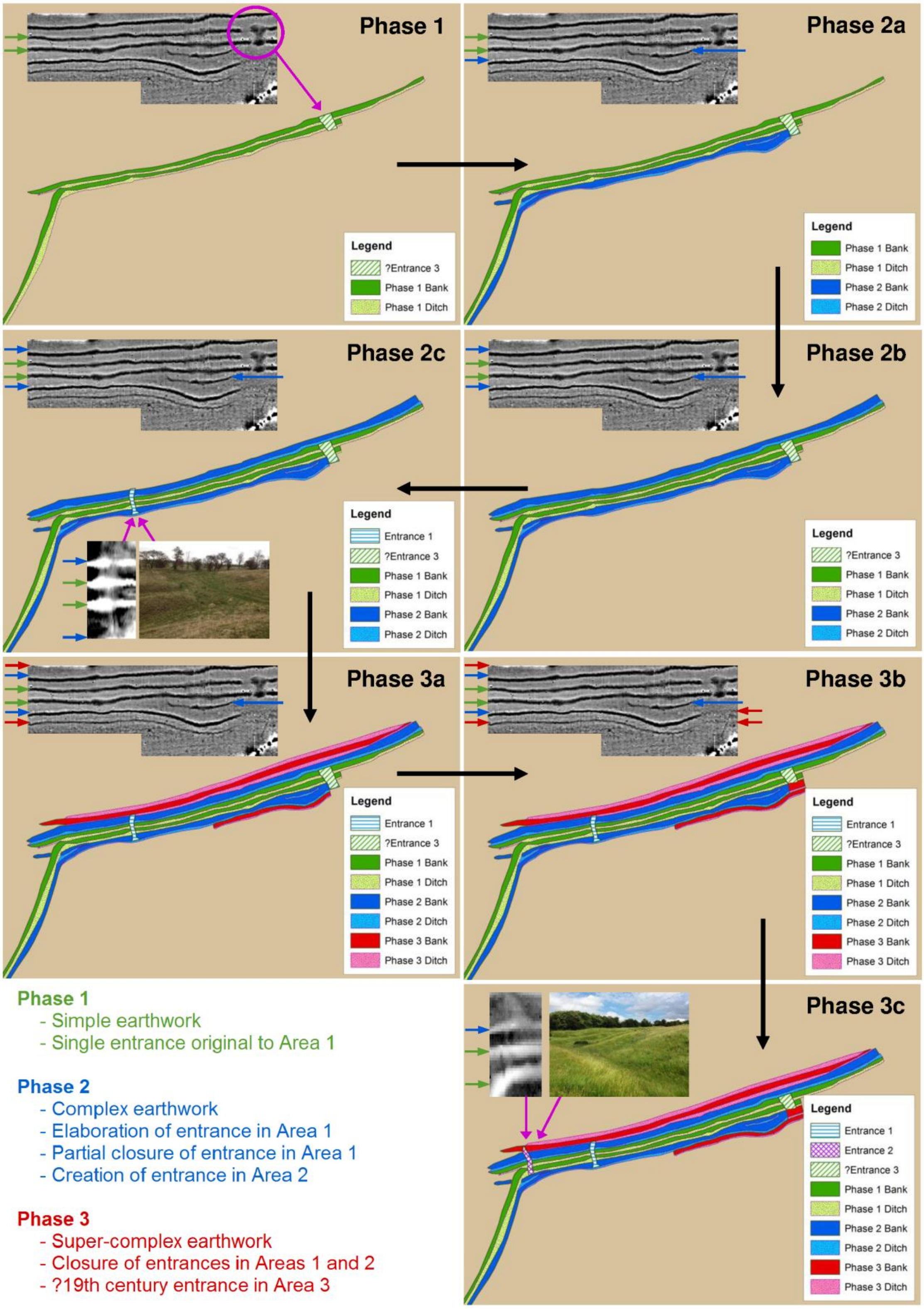


Fig 6.38 Phasing model
The green, blue and red arrows indicate the locations of the phased ditches on the geophysical plots. The purple arrows indicate the locations of the entrances. See Figs 6.39-6.49 for larger images.

The monument seems to have begun life in the Late Bronze Age (see Section 6.2, above) as a simple earthwork with two bank and ditch pairs (B3-D3-B4-D4, from north to south; Fig 6.39). D3 and D4 are magnetically similar in Area 1 (Figs 6.28 and 6.30) and are the only ditches that appear to have had an original entrance (?Entrance 3) in that area (Figs 6.30 and 6.40). This original entrance does not appear on the 1855 Six Inch OS map (Fig 6.41) or any subsequent editions, so it seems possible that the gaps in the banks were filled in at a later stage to create continuous earthworks. Alternatively, the banks may always have been continuous, and the ditches alone may have had gaps in them during Phase 1 (possibly suggesting that they were dug in segments and joined together). However, the elaborate nature of the curved banks and ditches to the south of ?Entrance 3 (which have been assigned to Phases 2 and 3, below) does suggest that there was something important located at this point along the monument which was being referenced. As the geophysical surveys show no evidence for the presence of a round barrow or any other feature here, the most parsimonious explanation for the curving banks and ditches would be that they are signalling and elaborating the presence of an entrance. This is reminiscent of hillfort entrances, as at Danebury (Cunliffe 1984; Cunliffe and Poole 1991), and suggests that movement across Huggate Dykes was intended from the earliest stage of its construction.

Fig 6.39 Phase 1 banks (B3, B4) and ditches (D3, D4)

Fig 6.40 Probable Phase 1 entrance (?Entrance 3)

Fig 6.41 Absence of entrance in Area 1 on 1855 Six Inch OS map

Phase 2 is divided into three sub-phases: earthwork building to elaborate the southern end of the Phase 1 entrance (Phase 2a); earthwork building to block the northern end of the Phase 1 entrance (Phase 2b); and the construction of a new entrance (Phase 2c). In Phase 2a, the Phase 1 simple linear earthwork was subsequently modified with an additional bank B5, which is bisected by small ditches in both the Western and Eastern Zones (D9 and D5, respectively), and which has a ditch D6 on its southern side (making the sequence B3-D3-B4-D4-[B5-D9/D5-B5]-D6; Fig 6.42). B5 and D6 do not appear to have blocked the Phase 1 entrance (?Entrance 3) in Area 1 when they were first constructed (Fig 6.43). The geophysical survey could not establish the morphology of B5, which had the same magnetic signature as the ground around the monument, and thus its shape immediately to the south of ?Entrance 3 has been inferred from the gaps between D4 and D6. Therefore, in Phase 2b the bank-and-ditch sequence would have been B2-D2-B3-D3-B4-D4-[B5-D9/D5-B5]-D6 (Fig 6.42).

The construction of Entrance 1 in Area 2 appears to have taken place in Phase 2c, following the earthwork construction in Phases 2a-b, rather than at the same time (Fig 6.44). The antiquarian E Maule Cole (1888: 48) argues that Entrance 1 is an ancient feature original to the monument, rather than a historic one. Although Cole's interpretation that the entrance is original is not entirely correct, his assessment that the banks 'intentionally' stop to create a passage (ibid.) does seem to be supported by the geophysical survey in Area 2. Entrance 1 is not an original feature from Phase 1—evident from the presence of D2, D3 and D4 underneath the entrance's causeway (Fig 6.33)—but it is also not a modern one because it was blocked by at least one of the Phase 3 banks (B1; possibly also blocked by the related possible ditch ?D8, and the southern bank B6 and ditch D7), presumably in prehistory.

Fig 6.42 Phase 2a bank (B5) and ditches (D5, D6, D9), elaborating probable Phase 1 entrance (?Entrance 3)

Fig 6.43 Phase 2b blocking of northern end of probable Phase 1 entrance (?Entrance 3)

Fig 6.44 Phase 2c entrance (Entrance 1)

If B5, D5 and D6 belong to Phase 2a in Area 1, as suggested by the geophysics, then the short ditch segment D9 (similar to D5 in that it bisects B5) should also be assigned to this phase. Both on the ground and on aerial photos, it is difficult to separate out the banks and ditches at the western edge of the Western Zone (at the southern edge of Area 3; Fig 6.45). D9 in particular is subtle on the ground, and its western end appears to join the Phase 1 ditch D4 (Fig 6.45, red arrow). B5 splits into a Y shape, with one segment (south of D9) turning to the south-west to run parallel along the top of Tun Dale with B4 and D4 (Fig 6.45, blue arrows), and another segment (north of D9) continuing in a roughly E-W direction into the neck of the valley (Fig 6.45, black arrows). The second segment (Fig 6.45, black arrows) appears to stop at the eastern edge of D4 and reappear at the western edge of B4. However, multiple small farm tracks in this area (visible on Fig 6.45 to the left of the red arrow and between the blue arrows) complicate the accurate assignment of particular bank segments to the phased model. It is possible that the segment of B5 to the south of D9 (Fig 6.45, blue arrows) might actually belong to B6 (currently assigned to Phase 3a), which would match Mortimer's map (Fig 6.46). Mortimer shows the southernmost bank (B6) continuing along the upper edge of Tun Dale. Notably, this is the portion of Huggate Dykes where the Ordnance Survey differs from Mortimer's map (Fig 6.46, black versus red lines). However, on the ground this bank appears to be bonded in with the portion of B5 that is known to continue from Areas 1 and 2, and the early OS maps (e.g. Fig 6.41) that include B6 depict it as separate and not the same feature as the upslope bank (or half bank) which runs along the eastern edge of Tun Dale.

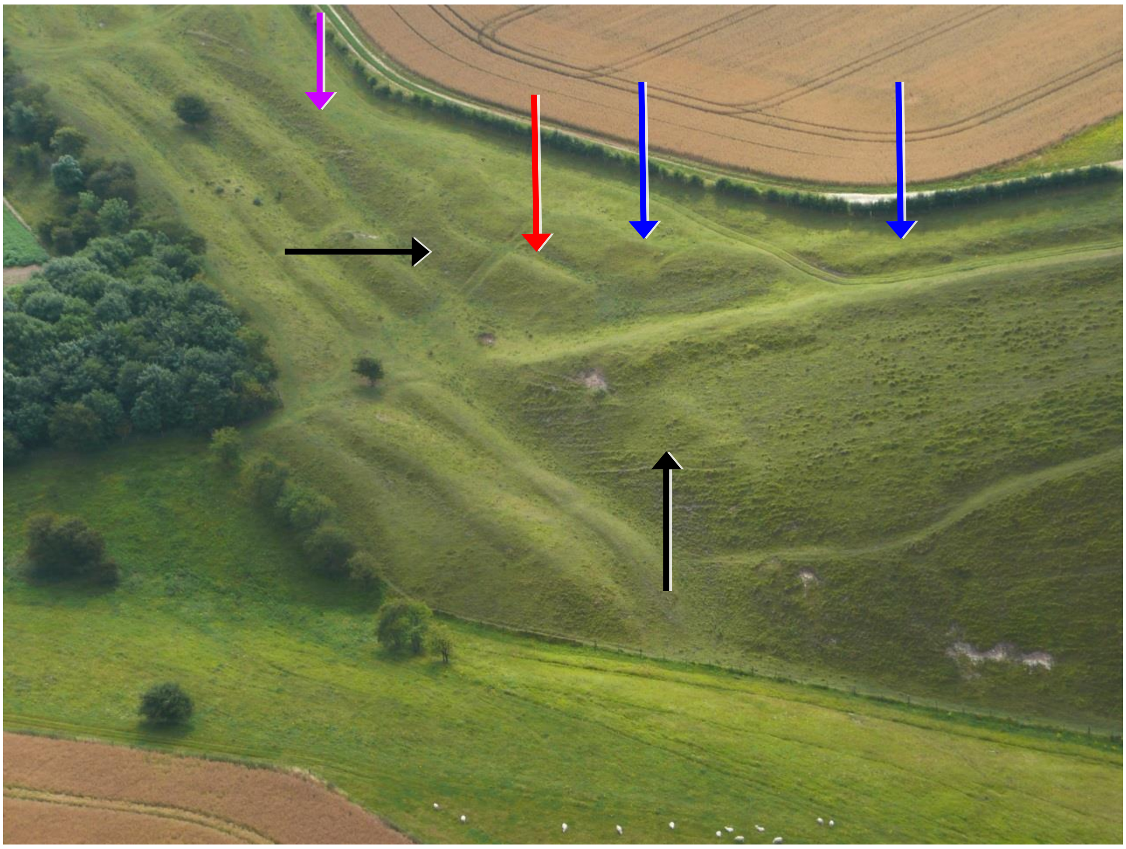


Fig 6.45 Halkon's aerial photograph of the banks and ditches near Area 3, with B5 and D9 highlighted
The segment of B5 to the east of its Y-shaped bisection is indicated by the purple arrow. The segment of B5 to the north of D9, which stops at D4/B4 and reappears at the neck of Tun Dale, is indicated by the black arrows. The blue arrows highlight the segment of B5 which turns to the south-west. D9 is indicated by the red arrow. (Photograph: Peter Halkon 2010. Reproduced with permission.)

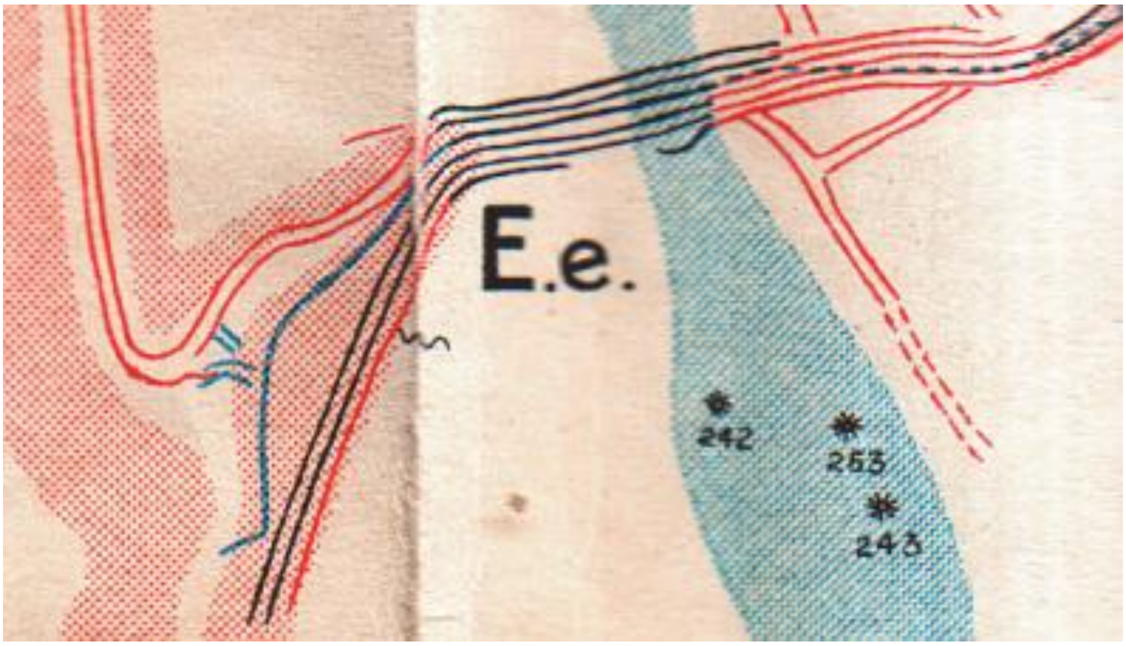


Fig 6.46 Mortimer's map around Huggate Dykes
(Source: Mortimer 1905: foldout map at front of volume)

Phase 3, like Phase 2, has three sub-phases (3a, 3b and 3c). Phase 3a is represented by two banks and two to three ditches, which are fossilised in the field boundaries (B6) and farm track (B1) still in use today (with the sequence of the monument being D1-B1-?D8-B2-D2-B3-D3-B4-D4-[B5-D9/D5-B5]-D6-B6-D7, from north to south; Fig 6.47). Now a super-complex monument, it is likely that Phase 3a marked a significant shift in the patterns of movement around Huggate Dykes. The addition of D1, B1 and ?D8 blocked access to the land to the north of Entrance 1 (Fig 6.48), and B6 with its associated D7 may or may not have closed the southern end of Entrance 1 (compare Figs 6.12/6.13, top/6.41 with 6.13, bottom/6.14/6.15). Phase 3b saw the extension of B5, D6, B6 and D7 across the gap in ?Entrance 3. The Phase 3b portions of D6 and D7 are represented by shallow ditches or possible post rows; these are magnetically different from the earlier phases, and therefore appear to constitute a separate episode of construction. B5 and D6 carry on eastwards across York Lane (Mortimer 1905: foldout map at front of volume; Fig 6.6) and are hypothesised to belong to Phase 2a. Thus, the southern end of ?Entrance 3 would have been delimited by banks and ditches on both sides. Although there is, at present, no evidence that the eastern side of the entrance was elaborated in the same way as the western side (by the curvature of B5, D5 and D6), it is possible that future fieldwork might reveal otherwise. The

Phase 3b portions of B5 and D6 seem to have been built to block the entrance fully, joining up the Phase 2a banks and ditches in the process. B6 and D7 may continue eastwards beyond ?Entrance 3, but there is no evidence of this on the OS maps discussed in Section 6.3.1 (and the geophysical surveys were unable to resolve the issue due to complications with access to the field). If B6 and D7 continue eastwards to the edge of the Eastern Zone, then they might converge with the N-S trackway that runs southwards (see Section 6.3.6). If, however, they stop at the eastern edge of ?Entrance 3 (i.e. the edge of the geophysical surveys), then they could be referencing an obsolete entrance.

The Phase 3b earthworks would have restricted the directions in which people and animals were allowed to move on Huggate Pasture. Although N-S access across the monument—available in Area 1 during Phase 1 and in Area 2 during Phase 2—may have been blocked, E-W travel may have been possible on top of the monument as well as beside it, as the northern banks B1 and B2 are wide (B1 is sufficiently wide enough to accommodate modern cars). If movement was intentionally directed on top of one or more of the banks, then the (presumed) earlier route marked by Mortimer's Tun Dale trackway (see Fig 6.6) could have been maintained throughout Phases 1-3.

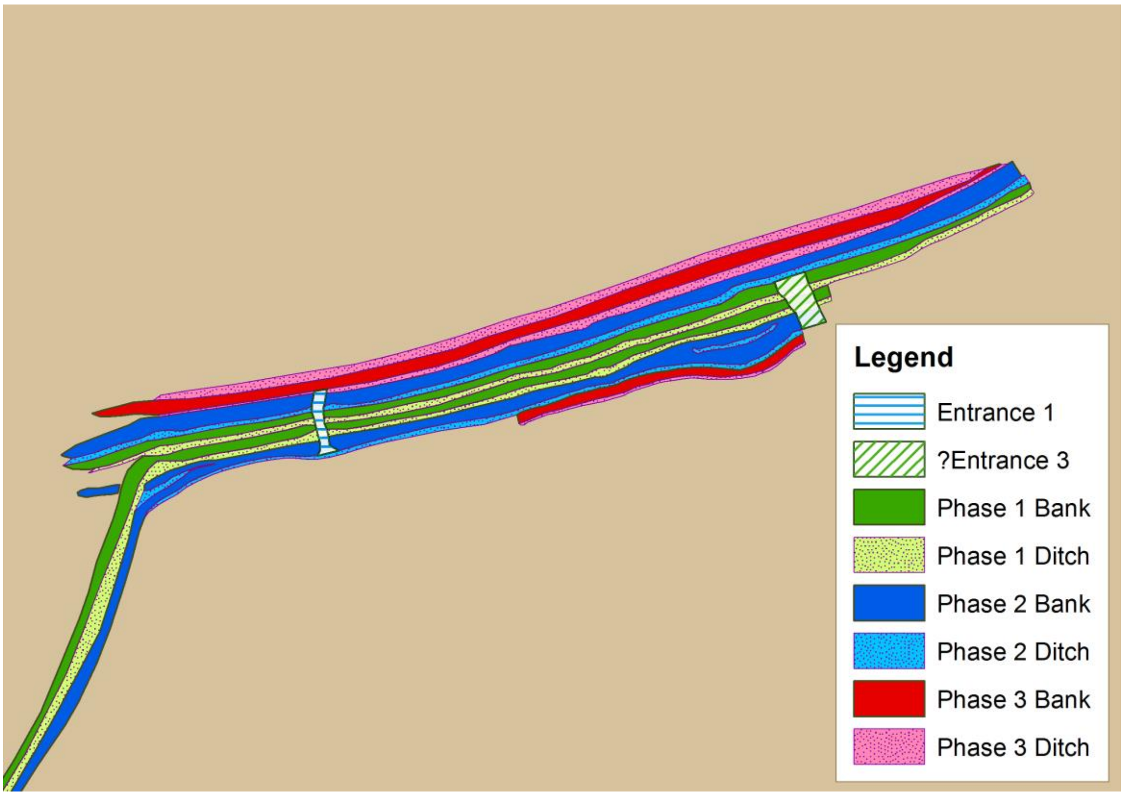


Fig 6.47 Phase 3a banks (B1, B6) and ditches (D1, ?D8, D7)

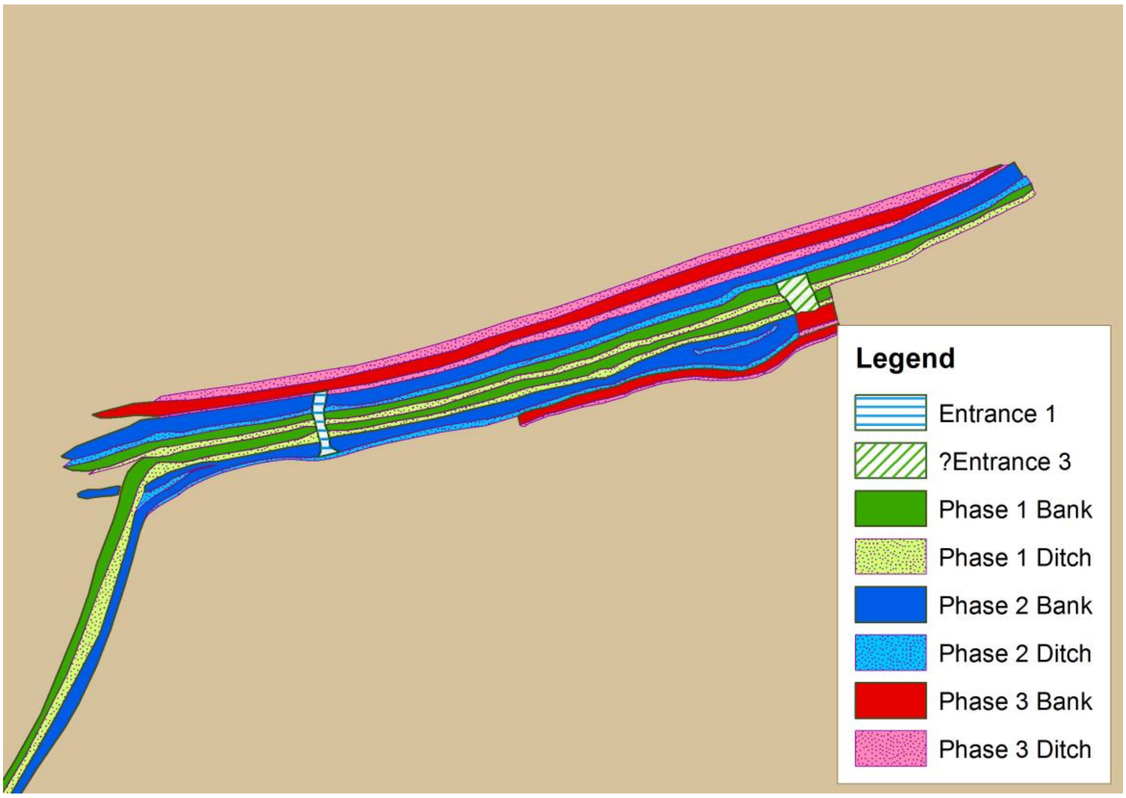


Fig 6.48 Phase 3b extension of Phase 2a and 3a banks and ditches (closing Phase 1 probable entrance, ?Entrance 3), and blocking of northern end of Phase 2c entrance (Entrance 1)

A third entrance, Entrance 2, was added in Area 3 in Phase 3c, possibly after the Phase 3a-b earthworks had already become ancient (Fig 6.49). Entrance 2 does not cut across B5 or D9, and its relationship to B1 and D1 is unclear. It appears to cross B1 on the ground, but the original spatial relationship between the entrance and the bank is obscured by the presence of a farm gate and track where they meet. Entrance 2 is clearly shown on the 1892 Six Inch OS map (Fig 6.50) onwards, but not on the 1855 or 1858 maps (Figs 6.13, top/6.40, 6.12), so it is possibly related to nineteenth-century access routes around and across the monument, rather than any of the earthwork phases. For almost the entire length of the core of the monument, the space between B1 and B2, where the depression or ditch ?D8 is located, forms the civil parish boundary that divides Huggate Civil Parish from a detached portion of Bishop Wilton with Belthorpe Civil Parish (see Section 6.3.1 for Figs showing this boundary). Immediately to the north of Area 3, and exactly in line with Entrance 2, the parish boundary turns north-westwards across B1 and continues along the western edge of Tun Dale (Fig 6.50). Thus, it seems likely that this entrance was formalised, if not originally constructed, in the second half of the nineteenth century.

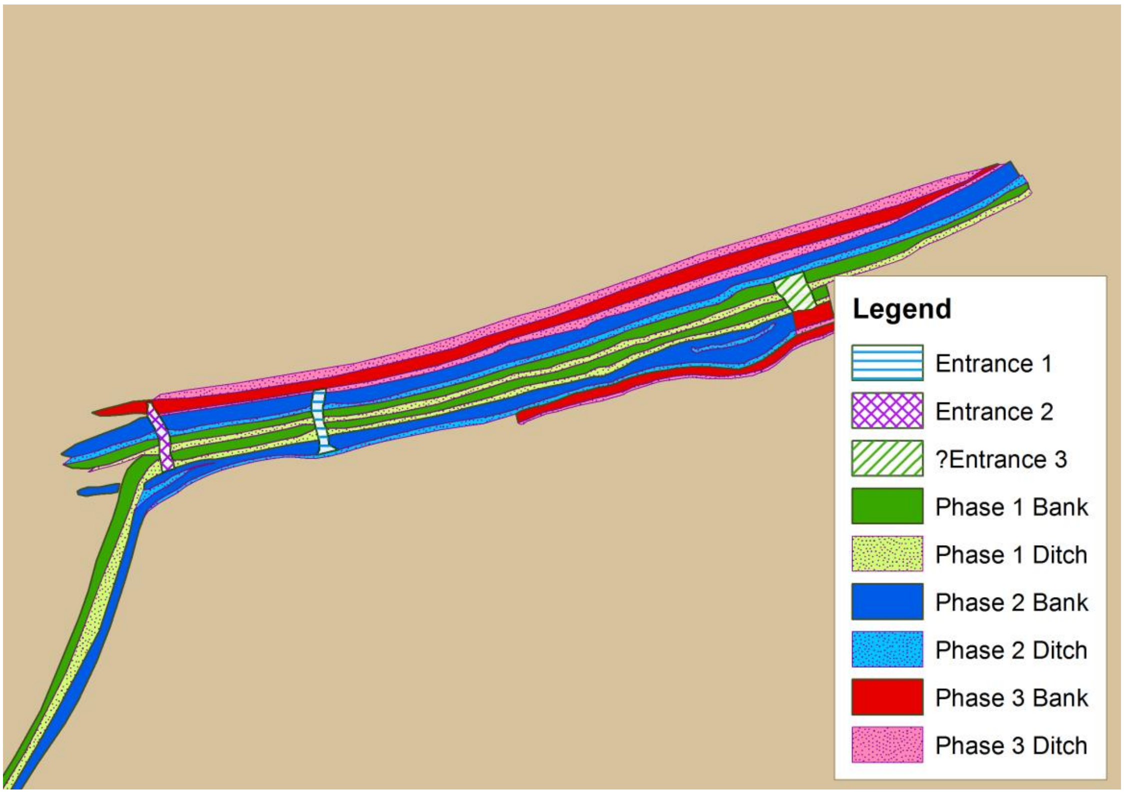


Fig 6.49 Phase 3c entrance (Entrance 2)

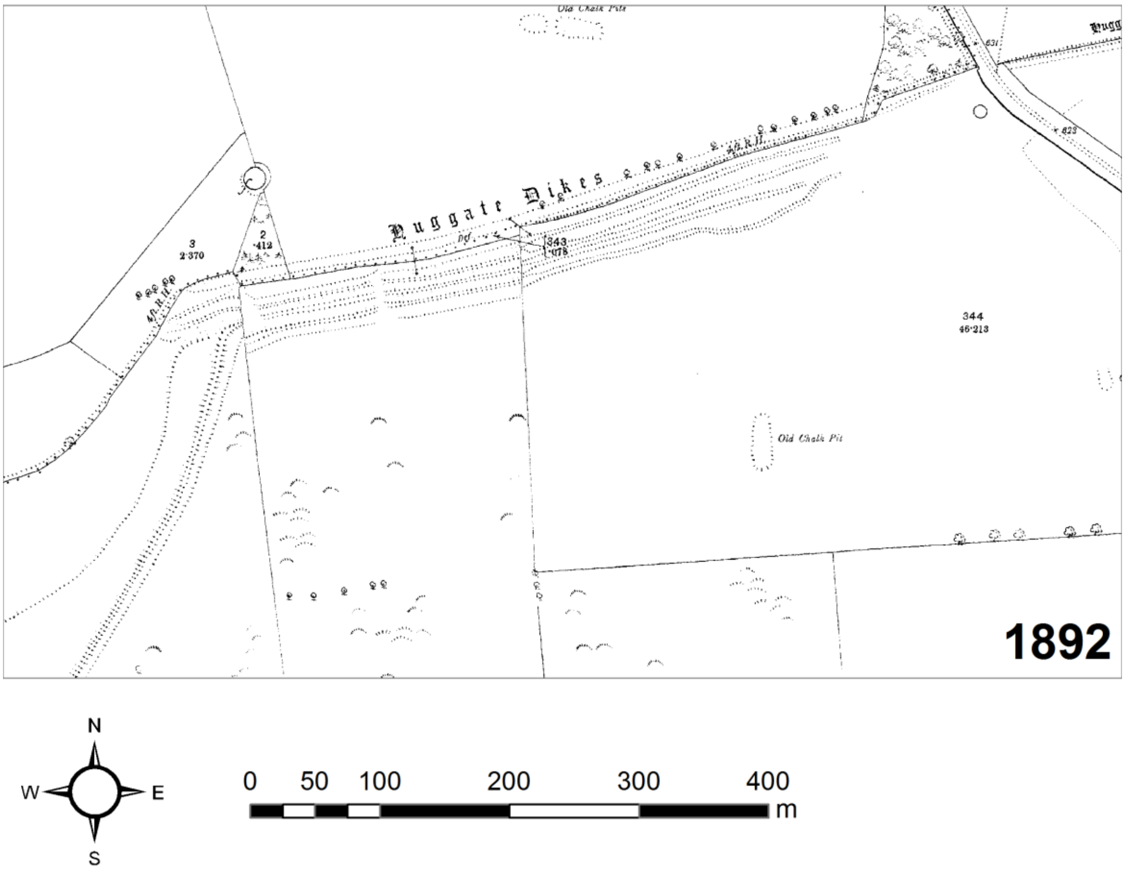


Fig 6.50 Phase 3c entrance on 1892 Six Inch OS map
Contains Ordnance Survey data © Crown copyright.

In summary, the geophysical surveys outlined above have revealed a multi-phased earthwork construction sequence at Huggate Dykes (Figs 6.37-6.38). The site developed from a simple linear earthwork (Phase 1) into a complex one (Phase 2), and then finally into the super-complex earthwork (Phase 3) that exists today. Entrances were created, decommissioned and re-created at other points along the monument as patterns of movement across Huggate Pasture changed through time. The geophysical fieldwork was targeted and intensive, rather than extensive, in an effort to understand particular features within the monument that could not be understood from previous studies and desk-based methods alone. The phasing model must be considered within the context of the overall site biography, which stretches from the birth of a special place on top of Huggate Pasture in the Early Bronze Age to the present day. It is the present-day incarnation of the monument—and the ways in which it has affected the author—to which this chapter now turns.

6.3.5 Field visits and experiential archaeology on the ground

In order to understand the complicated life history of Huggate Dykes, physically visiting the monument was essential. Whereas the linear earthworks in the heart of Wetwang-Garton Slack were destroyed by the quarrying which necessitated the excavations of the 1960s to 1980s (see Chapter 5), Huggate Dykes is partially extant and therefore proved to be a useful location for exploring the wider linear earthwork landscapes of the Yorkshire Wolds. Like MacDonald's (2014) study of Taigh Mòr, fieldwork often constituted informal site visits, rather than scientific surveys. The author travelled to Huggate Dykes with groups of colleagues on multiple occasions from 2012 to 2014, in various seasons and weather conditions. These field visits generated not only information regarding the morphology of the monument, but also inspiration for artistic ways of approaching the past. By attempting to understand Huggate Dykes through the use of phenomenology and other experiential techniques (see Section 2.1), it is possible to write a biography of the site which affords it agency in the present, as well as in the past, and which is sensitive to its role in the modern world.

The initial site visit took place in July 2012 and was led by Dr Peter Halkon (University of Hull), who sought to introduce the author to the linear earthworks of the Wolds. Having never seen a linear earthwork in real life before this visit, and having underestimated the scale these monuments, the site was unexpectedly impressive. Walking on the banks and on the ditches in the Western Zone (Fig 6.51) led to an impromptu exercise in phenomenology (see Appendix E). The visit occurred after a spell of rain, which made this an ideal time to investigate role of the permeability of chalk on movement—particularly, on how the earthwork's banks and ditches might have differentially retained water, which could have had implications for the day-to-day use of the site. Although it felt more natural to walk on the high banks, the author made her way down the slope of one into a ditch. After walking in the bottom of the ditch for only a few metres, the moisture retained by the vegetation became uncomfortable. Upon passing a section of exposed chalk (Fig 6.52), which was drier than the grassy ditches and banks, it occurred to the author that the permeability of these features might have been dramatically different if they had been regularly cleared of vegetation. Climbing back up onto a bank, the author wondered if the livestock around Huggate Dykes ever walked through the monument, and if they did, whether they tended to favour the banks or ditches (or neither, should they be indifferent). It seemed likely that the wet grass which so irked the author would have been far less troublesome for prehistoric livestock, and the banks and ditches did not look steep enough in their present state to stop sheep and cows from wandering across the monument (a hypothesis reinforced by the presence of fences with gates along the edges of the fields). However, when the earthwork was constructed in the Late Bronze Age it must have been much steeper, and therefore could have effectively directed the movement of people and animals on Huggate Pasture.

These accidentally phenomenological musings on movement and wet grass proved to be pivotal for the overall direction that the project took. Until this point in time, the focus had been on how linear earthworks would have bounded areas of the landscape and *inhibited* movement; after this initial visit to Huggate Dykes, the question became one of how particular earthworks would have *enabled* movement through the formalisation of socially or cosmologically acceptable routes, which would have channelled people and animals along and across them. Walking along the earthworks that branch off from the core zone of Huggate Dykes into Tun Dale (Fig 6.53), the connections that must have existed between the monument and its wider landscape became apparent.

Fig 6.51 View from inside D2, looking east
(Photograph: author)

6.52 Dry chalk, surrounded by wet vegetation
(Photograph: author)

Fig 6.53 Walking along the western edge of Huggate Pasture
(Photograph: author)

The next two site visits to Huggate Dykes were undertaken as field trips with other postgraduate students. The first of these field trips occurred in April 2013, when the author and her lead supervisor, Prof Ian Armit, organised an outing to Hull and the Yorkshire Wolds for students undertaking the MA Archaeology course at the University of Bradford. Movement was yet again the main topic of discussion on site, and it was during this visit that it was decided that geophysical fieldwork should be undertaken to investigate Entrance 1. In June 2013, the 16th Iron Age Research Student Symposium (jointly hosted by the University of Bradford and the University of Hull) visited Huggate Dykes during its post-conference field trip. At the end of the visit, when the delegates were walking up the steep slope at the neck of Tun Dale, Dr Lindsey Büster (University of Bradford; Fig 6.54, second from the left) remarked that when the earthworks were new and gleaming white, they must have been a welcome sight for travellers who might have found themselves at the bottom of this valley, which looks like a labyrinth with all of its intercutting wolds and dales. Collectively, the delegates hypothesised that Huggate Dykes, along with its network of branching earthworks and trackways, could have signposted the gentlest, least difficult routes out of the valley, and that this would have been especially useful for non-local travellers who were not familiar with the landscape. Although the stories told by the delegates may not entirely reflect the realities of travel around Huggate Dykes in later prehistory, they allow us to hypothesise about the past, at the very least, and they serve as ‘a way of guiding the attention of listeners’ towards a ‘perceptually attuned’ understanding of the world (Ingold 1993: 153).

Fig 6.54 Telling stories at Huggate Dykes
Delegates of the 16th Iron Age Research Student Symposium discuss the ways in which linear earthworks may have signposted acceptable routes across the Yorkshire Wolds. View looking E from the bottom of a ditch. The tree in the centre is the same one shown in the foreground of Fig 6.3 (right-hand side) and Fig 6.56 (right edge). (Photograph: author)

The final series of field visits that the author made to Huggate Dykes occurred during the season of geophysical fieldwork (see above) carried out in December 2013 and February 2014. In addition to completing geophysical surveys to investigate the features in Areas 1-3, these visits were used to clarify the more complicated aspects of the monument's morphology (e.g. the segments of B5 to the north and south of D9) and phasing (e.g. whether or not Entrance 1 appeared to be original; see Section 6.3.4). The geophysical grids were set out with a Topcon GPS (the base station of which is visible in Fig 6.55), which was initially intended to be used for topographic survey as well. However, equipment failure meant that the GPS was not available when it came time to conduct the topographic survey. Considering costs implications for sourcing a new GPS, as well as the wide availability of aerial photographs and OS maps of the site, meant that intensive topographic survey (which could have been slightly redundant) was abandoned in favour of general walkover survey. The team members who were not busy undertaking geophysical surveys walked across the site, covering the Eastern and Western Zones virtually in their entirety (Fig 6.56)—it was decided that the team should not scramble through the dense trees covering B1 in the Western Zone (visible behind the fence on Fig 6.55)—and the north-eastern end of the Tun Dale Zone, just outside of the core of the monument (Fig 6.57). During the walkover survey, the team discussed the sizes of the various banks and ditches, and possible axes of movement. This proved to be a useful exercise, as it gave the author more confidence in her assessment and phasing of the most complicated banks and ditches (particularly the western end of B5 and its associated ditches; see Section 6.3.4.4). The broad-brush approach adopted during the walkover survey (in contrast to the type of detailed topographic survey that would have been conducted, had the GPS not failed) allowed her the freedom to think aloud whilst walking along and around the monument, with ample time to return to a handful of her favourite features (e.g. Entrance 1 and B2) multiple times in order to better understand them.

Fig 6.55 Fieldwork at Huggate Dykes in the winter of 2013/2014
The survey team pause during the walkover survey, after battling poor weather conditions on the first day of fieldwork in December 2013. The GPS base station is visible on B3, to the left. (Photograph: author)

Fig 6.56 Walkover survey in freezing weather with limited visibility
Looking west. The tree at the right edge of the photograph is the same one in Figs 6.3 and 6.54. It served as a useful point of reference when walking along the banks, and was only a minor inconvenience to the geophysical surveys. (Photograph: author)

Fig 6.57 Northern neck of Tun Dale in the mist
The area of the Tun Dale Zone immediately outside the core of the monument was prioritised. (Photograph: author)

Throughout the course of this project, the author has attempted not only to acquaint herself with Huggate Dykes as a superb example of linear earthworks on the Yorkshire Wolds, but also to feel at ease with the complexities of the monument's life history. The geographer Tuan (1975: 152) argues that '[t]o know a place fully means to both understand it in an abstract way and to know it as one person knows another', which implies a degree of reflexivity. People come to know each other through interactions in which they have the agency to affect each other, and thus to know a place in the same way would be to afford it agency. The project has sought to value the site as more than a case study or a piece of nationally-important, tangible heritage—in other words, to enjoy and appreciate the monument as a place in its own right, and not merely for its academic merit. This type of approach was adopted by De Nardi (2014), who has produced an experiential map of the Iron Age cult site of Monte Altare in Italy which draws upon and records both archaeological information and local people's understandings of the place. She argues that modern features are 'subsequent episodes in a place's biography', and that local people's experiences of landscape are as valid for understanding the past as academic archaeology (ibid.: 6). This PhD argues that by supplementing traditional, 'scientific' archaeological methods (e.g. GIS, geophysics) with more artistic techniques, it is possible not only to gain a richer understanding the past, but also to better contextualise this understanding of the past within the paradigms of the present. In addition to telling stories that imagine particular events or processes in the past (as with the Iron Age travellers in Tun Dale proposed by the Iron Age Research Student Symposium delegates; see above), methods such as photography and poetry may help to convey messages about prehistory, and to frame it in a way that is relevant and interesting in modern society, both within and outside of academia.

As defined by this project, an artistic approach to landscape attempts to see the world in terms of aesthetics, experience and performance. It conveys ideas about landscape through creative, consciously subjective means, such as illustration, photography and poetry—in other words, the output of such an approach is, in itself, as aesthetic, experiential and performative as the landscape which it seeks to represent. Its precedents and inspirations include: archaeological applications of phenomenology (e.g. Tilley 1994, 2010; see

Section 2.1) and meshworks (Ingold 2007; see Section 2.3.1 and Chapter 7); studies of aesthetics and experience in geography (e.g. Meinig 1979; Tuan 1975, 1979); sensorial, impressionistic reconstructions of archaeological sites (e.g. Gheorghiu 2009, 2012; Gheorghiu and Ştefan 2013, 2014); and the tradition of artists in residence, who might work alongside archaeologists on site-specific excavations (e.g. Rik Hammond at the Ness of Brodgar and other Orcadian sites, http://www.rikhammond.com) or wider landscape projects (e.g. Miranda Creswell for EngLaID at the University of Oxford, https://visualenglaid.wordpress.com). Artists such as Richard Long have explored performance in relation to specific places and landscapes. Long's *A Line Made by Walking* (1967) and longer walks, linear and circular, through landscapes like Dartmoor (see www.richardlong.org and http://www.tate.org.uk/art/artists/richard-long-1525) are examples of walking as art, and both Rik Hammond (http://www.rikhammond.com) and the SERF Project at the University of Glasgow (Poller 2015) have used GPS tracking to depict movement in archaeological practice and landscape survey. Throughout this project's field visits to Huggate Dykes, the themes of movement, deep time and sense of place seemed key to understanding the site. Photography and poetry help to capture and convey the aesthetic qualities of the place, and to write its biography in an expressive manner which is conscious of performance—performance by the earthwork builders, by the people who encountered the earthwork once it had been finished, by the archaeologists who have studied it since, and, perhaps, by the earthwork itself.

The images taken during the 2013/2014 fieldwork campaign (Figs 6.56-6.58), for example, seem to show Huggate Dykes lost in the mists of time—really just the mists of a December cold front. Many of the photographs taken during the fieldwork, like Fig 6.57, are of the earthworks and the natural landscape only; without people to signal the era in which they were taken, the photographs and their landscapes appear timeless. In contrast, the juxtaposition of people and earthworks (Figs 6.56, 6.58) illustrates the monumentality of these banks and ditches, and their gently eroded, turfed surfaces hint that they are far older than the people who now walk along them. By choosing to share particular images, rather than others, the photographer creates a narrative about a specific past.

Fig 6.58 Walking into the mist at Huggate Dykes
(Photograph: author)

Creative writing, such as poetry, also can also help to convey messages about ancient landscapes. In her book *A Land*, first published in 1951, Jacquetta Hawkes unashamedly mixes artistic, self-reflective narrative with geology and archaeology:

> '... I have used the findings of the two sciences of geology and archaeology for purposes altogether unscientific. I have tried to use them evocatively, and the image that I have sought to evoke is of an entity, the land of Britain, in which past and present, nature, man and art appear all in one piece... I see a land as much affected by the creation of its poets and painters as by changes of climate and vegetation.'

(J Hawkes 2012 [1951]: vii)

She argues that archaeologists are 'instruments of consciousness who are engaged in reawakening the memory of the world' (J Hawkes 2012 [1951]: 19), and thus a narrative-based approach seems fitting, as it is capable of presenting the past in a way which is not only factually correct, but also evocative and engaging. Archaeology-themed poetry includes works by Hawkes herself (retained by the Jacquetta Hawkes Archive in the JB Priestley Library at the University of Bradford), Melanie Giles (e.g. in Chadwick 2004) and Seamus Heaney (e.g. 1975), and the author has been interested in this form of expression as an archaeological tool since 2011, when she began to write about the merging of art and science in her own archaeological practice (Appendix E). Inspired by Samuels' (1979) biographical approach to landscape (see Section 2.2.2) and drawing upon field visits to Huggate Dykes, a biography of Huggate Dykes was composed in verse:[2]

The Life of Huggate Dykes

They arrived
Trod on soft green
Stared at the horizon
Down the valleys
Into the depths of the earth

They broke me
Cut into my skin
Sliced deep gashes
All across me
Piled up my flesh

And so I shone
Gleaming white
The sky stretched down to meet me

Then they went
Walked away
Forgot about me
And my scars
Depths of the earth exposed

The earth said no
Closed up
Grew soft green
All across me
Embraced my old body

But I was changed
Elevated
I no longer belonged to the earth

[2] This poem was presented as part of a paper given by the author at the Landscape Survey Group 2015 Conference in Shrewsbury (Fioccoprile 2015). The theme of the conference was *Landscape narratives: creating stories from archaeological survey*.

The poem takes on the voice of the place that becomes Huggate Dykes, imagining the site's biography from its own perspective as it becomes monumentalised and then forgotten. In other words, the place does not die with the end of prehistory, and its biography continues into the present day. By choosing to personify the Huggate Dykes—giving it a voice, memories and possibly emotions—the poem asserts that the place has as much agency as the people who have constructed its monumental earthworks. Once established, this agency and the place's history of interactions with people and the natural world cannot be given back. The place's biography is inextricable from its wider actor network (see Chapter 7) and although the linear earthwork is born out of natural materials (grass and chalk), the human actions which have led to its creation mean that it cannot return to the natural world after its creators abandon it.

Whilst the poem implies that Huggate Dyes cannot cease to be a place because of its anthropogenic origins, abandoned places will eventually become spaces again when they no longer have any agency in either the actor networks of the physical world or those which exist in people's memories. Tuan argues that places must be maintained through experience and interaction with people, or else they will revert back into space (Tuan 1975: 152; see Section 2.2). The material expressions of archaeological places (e.g. ancient monuments still visible on the ground, recorded place-names on maps) allow them to retain a degree of agency long after they have been left to go to ruin by their creators, and thus their transformation back into space can be prolonged through deep time. The fact that portions of Huggate Dykes are still extant as monumental earthworks—and the now-destroyed banks and ditches are recorded on maps, aerial photographs and geophysical plots—means that the place is still experienced by people and animals several thousand years after its birth. By finding new ways to engage with the site, such as poetry and creative photography, we diversify the types of experiences that maintain it as a place and extend the length of its biography.

6.3.6 Site biography: change over time?

The super-complex linear earthwork at Huggate Dykes developed not as a fully-formed entity, but rather through a series of human-landscape interactions that increasingly monumentalised a narrow stretch of land atop Huggate Pasture (Table 6.1). A special place was born here long before the linear earthwork was constructed. Early Bronze Age round barrows clustered on the high ground (see Sections 6.2 and 6.3.2). A routeway across the narrowest part of Huggate Pasture was formalised as a trackway, probably after generations of people and animals moved across this stretch of land. This route passes through a gap between clusters of round barrows, and it is not clear which came first. Regardless of the temporal relationship between the barrows and the trackway, by the time that the earthwork now called Huggate Dykes was constructed, this place was already laden with history and most probably associated with movement.

Stage of Life	**Date**	**Event**
Pre-birth	Early Bronze Age	Round barrows fill the high ground on and around Huggate Pasture.
	?Bronze Age	Route across Huggate Pasture is formalised as a trackway.
Birth	Late Bronze Age	Phase 1: A single earthwork with a probable entrance is constructed between the eastern edge of Tun Dale and the western edge of Horse Dale, crossing over the narrowest stretch of high ground atop Huggate Pasture.
Life	?Late Bronze Age to ?Iron Age	Phases 2a-2b: Two further banks and associated ditches are constructed to flank Phase 1 earthwork, embellishing/partially blocking Phase 1 entrance.
		Phase 2c A new entrance is constructed to the west of the Phase 1 entrance.
	?Iron Age to post-medieval period	Phase 3a-3b: Two further banks and ditches are constructed to flank Phase 1/Phase 2a earthwork. These become field boundaries by the post-medieval period, and earthworks in Tun Dale, Western and Eastern Zones become parish boundaries. Phase 1 entrance is fully blocked, possibly with different construction technique/materials.
	Anglo-Saxon period	An Anglo-Saxon burial urn was cut into one of the banks (probably Phase 2b or Phase 3a).
	Post-medieval period	Phase 3c: An entrance is constructed at the western edge of the core of the monument, in line with civil parish boundary.
		Antiquarians, including JR Mortimer, excavate round barrows on Huggate Pasture. Mortimer surveys and maps the earthworks and trackway at Huggate Dykes.
	Recent past to present day	Varley, Halkon and the author conduct archaeological fieldwork to investigate the earthwork at the core of the site. Student field trips visit the monument as an exemplar of later prehistoric landscape division on the Yorkshire Wolds, and the site inspires artistic works (e.g. poetry) as well as academic research.
Death	n/a	The site has never died and its biography continues into the present. The earthwork is still in use as a field boundary, is a Scheduled Ancient monument, appears on OS maps and is visited by archaeologists.

Table 6.1 Biography of linear earthwork at Huggate Dykes

The birth of Huggate Dykes in the Late Bronze Age—around a millennium after the birth of the place where monument is located—occurred when a simple earthwork of two bank and ditch pairs (B3, D3, B4, D4) was constructed along the alignment of the earlier routeway. These banks and ditches stretch across all four zones of the monument (Figs 6.59-6.62) and had a probable entrance in the Eastern Zone (Figs 6.60-6.61). In a second phase of earthwork construction, which may have occurred almost immediately or which may have taken several generations, two further banks with related ditches were added, flanking those from Phase 1. The northern bank and ditch (B2, D2) appear similar in plan to their earlier counterparts, whereas the southern bank (B5) was of more elaborate construction and was bisected by short ditch segments (D9 and D5) in the Western and Eastern Zones (Figs 6.59-6.60) and accompanied by another ditch (D6) along its southern edge. These blocked the Phase 1 entrance in the Eastern Zone. The southern Phase 2a bank (B5) continued south-westwards alongside a Phase 1 bank and ditch (B4, D4) in the Tun Dale Zone. After the construction of the Phase 2a banks, an entrance was cut through the Western Zone. The banks were levelled and the ditches infilled to create a causeway that allowed access in a N-S direction across the monument (Fig 6.59). A third phase of earthwork construction (D1, B1, ?D8, B6, D7) further elaborated the core zone of Huggate Dykes (Figs 6.59-6.60), creating the super-complex monument that is extant today. The Phase 2b entrance was now blocked, and sometime late in the monument's history—Phase 3b, which may have occurred with or immediately after the earthwork construction in Phase 3a, but most probably took place in the nineteenth century—a new entrance was constructed at the western edge of the Western Zone (Fig 6.59).

The life of Huggate Dykes is characterised by a series of subtle shifts in patterns of movement around and across Huggate Pasture. The main E-W axis of the monument was maintained and elaborated during three major phases, which would suggest a large degree of continuity in the overarching organisation of the landscape. N-S movement was controlled by changing entrances, and it is possible that there was always at least one entrance open at any given time (i.e. ?Entrance 3 was only blocked because Entrance 1 was already planned). However, the presence of the Phase 2a ditch D6, which would have blocked ?Entrance 3, underneath Entrance 1 suggests that there were episodes in the monument's life history when N-S movement across its core was not possible. The data available at present cannot resolve the absolute dating of Phases 1-3, and thus it is not possible to ascertain whether modification of the monument's banks, ditches and entrances occurred quickly or over a long period of time.

Funerary activity on Huggate Pasture, which characterised the place in the Early Bronze Age, appears to have enjoyed a hiatus until the Anglo-Saxon period. Although it is possible that people were depositing their dead on Huggate Pasture during the Iron Age (e.g. in the bases of the ditches, as at Wetwang-Garton Slack; see Chapter 5), there is, at present, no evidence to support this. The discovery of an Anglo-Saxon burial urn in one of the earthwork banks by Varley (see Section 6.2) reveals that by the Early Medieval period, Huggate Dykes was seen as an appropriate place for the recent dead. This appropriateness may have been influenced by the presence of the Early Bronze Age round barrows around the earthwork; the relationship between prehistoric barrows and Early Medieval funerary activities is documented by Williams (1998). If the people occupying and working the land around Huggate Dykes in the Iron Age felt a similar connection to the round barrows, rooted in mythological histories (see Gosden and Lock 1998) which they may have ascribed to the barrows, they may well have viewed Huggate Pasture as a place of the ancestral dead or spirits, if not the recent dead. Therefore, the absence of later prehistoric funerary activity at Huggate Dykes does not preclude the association of the monument with death during the three phases of earthwork construction and modification. Indeed, the funerary nature of its surrounding landscape almost certainly would have affected the meanings that people ascribed to the earthwork, and the stories that people told about the earthwork surely would have drawn upon existing mythologies related to its landscape context.

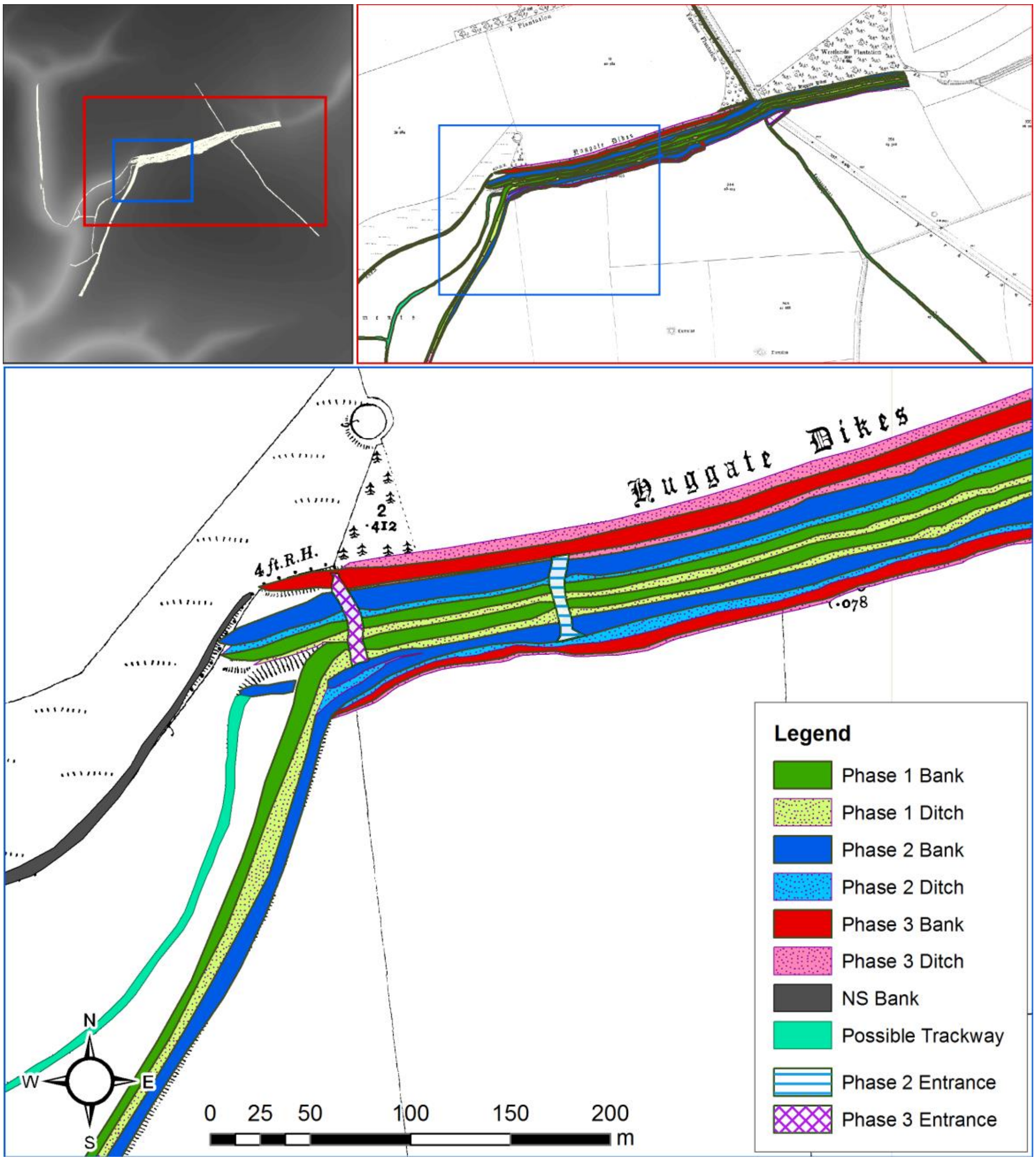


Fig 6.59 Western Zone

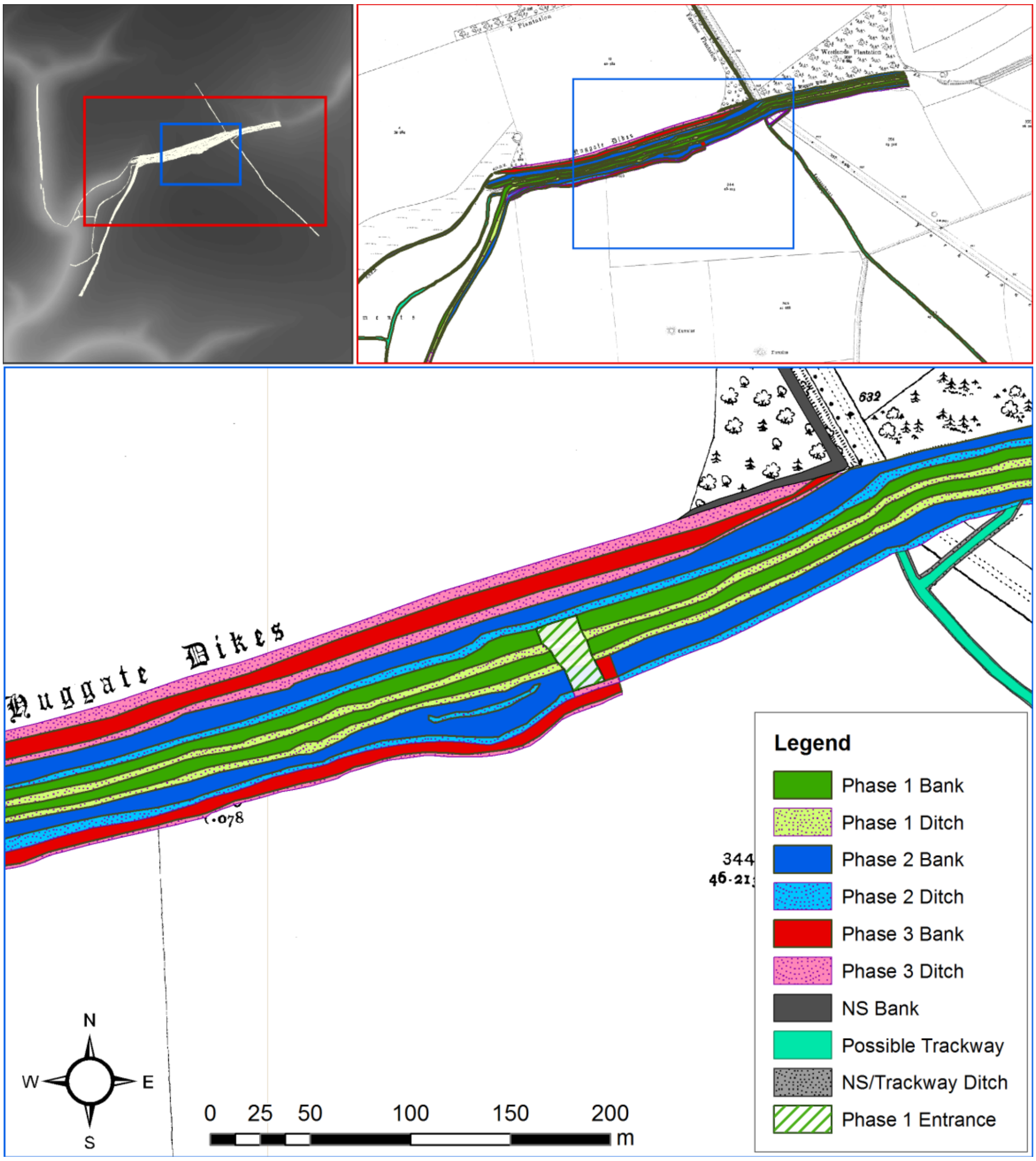


Fig 6.60 Eastern Zone
B5 and D6 are assumed to have continued eastwards over York Lane like the other banks and ditches, and therefore they have been assigned to Phase 2 to the east of ?Entrance 3. Phase 3 is represented by the blocking of this probable entrance, which would have connecting up disjointed segments (rather than extending the banks and ditches to the east). B6 and D7 (Phase 3) may continue to York Lane, or they may stop at ?Entrance 3, referencing the now-blocked entrance. Further survey is required to ascertain their extent. Contains Ordnance Survey data © Crown copyright.

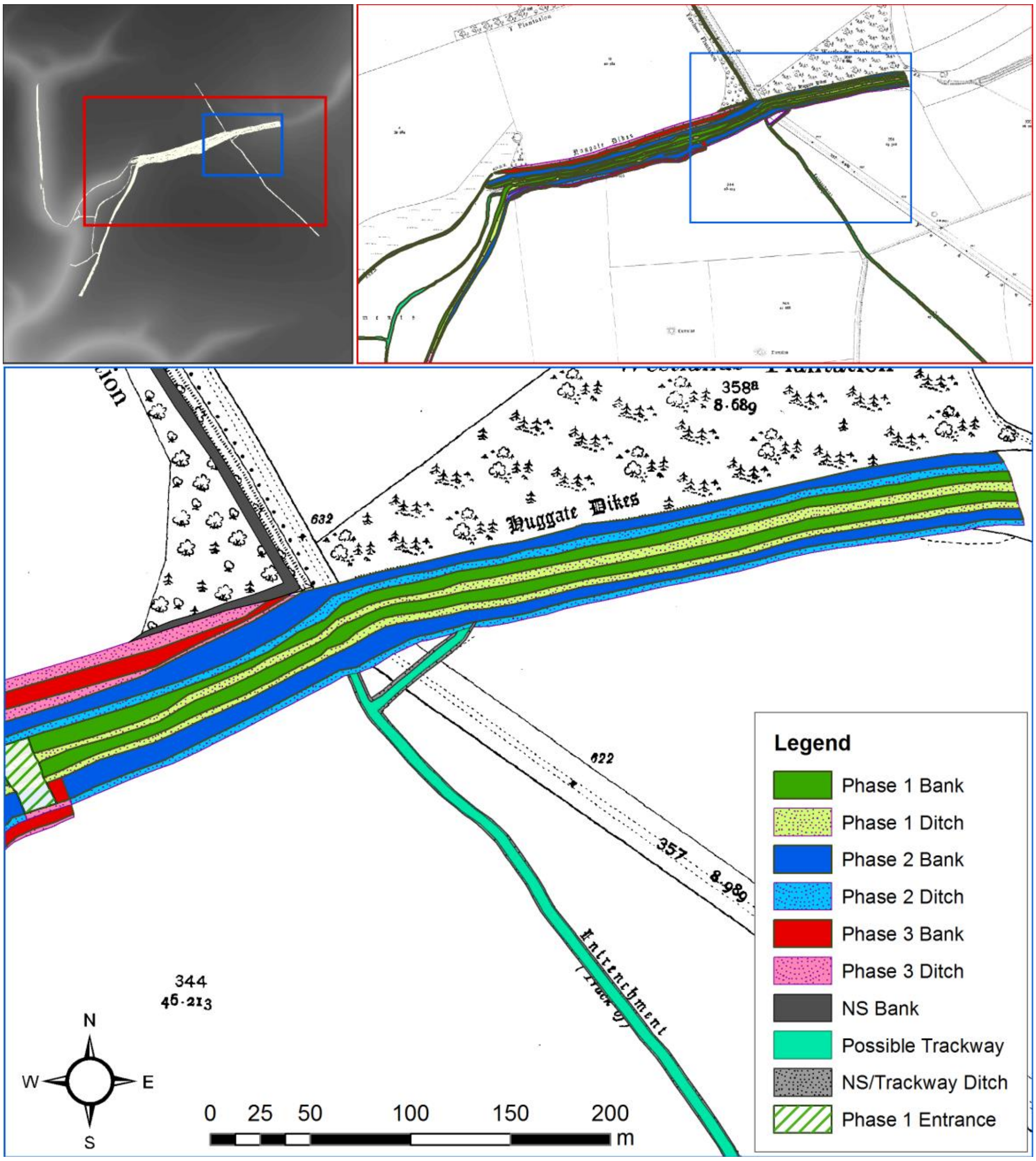


Fig 6.61 York Lane Zone

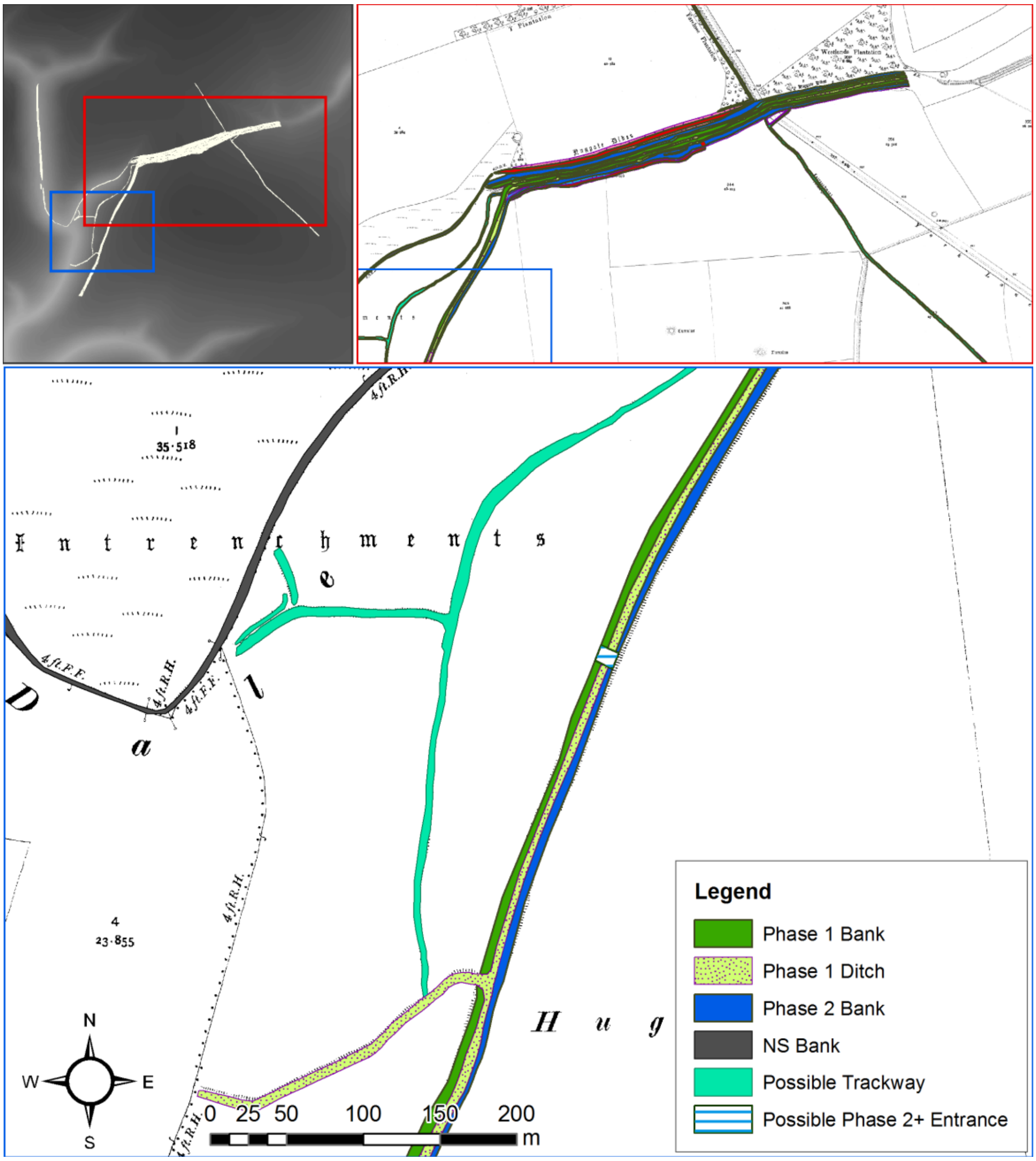


Fig 6.62 Tun Dale Zone

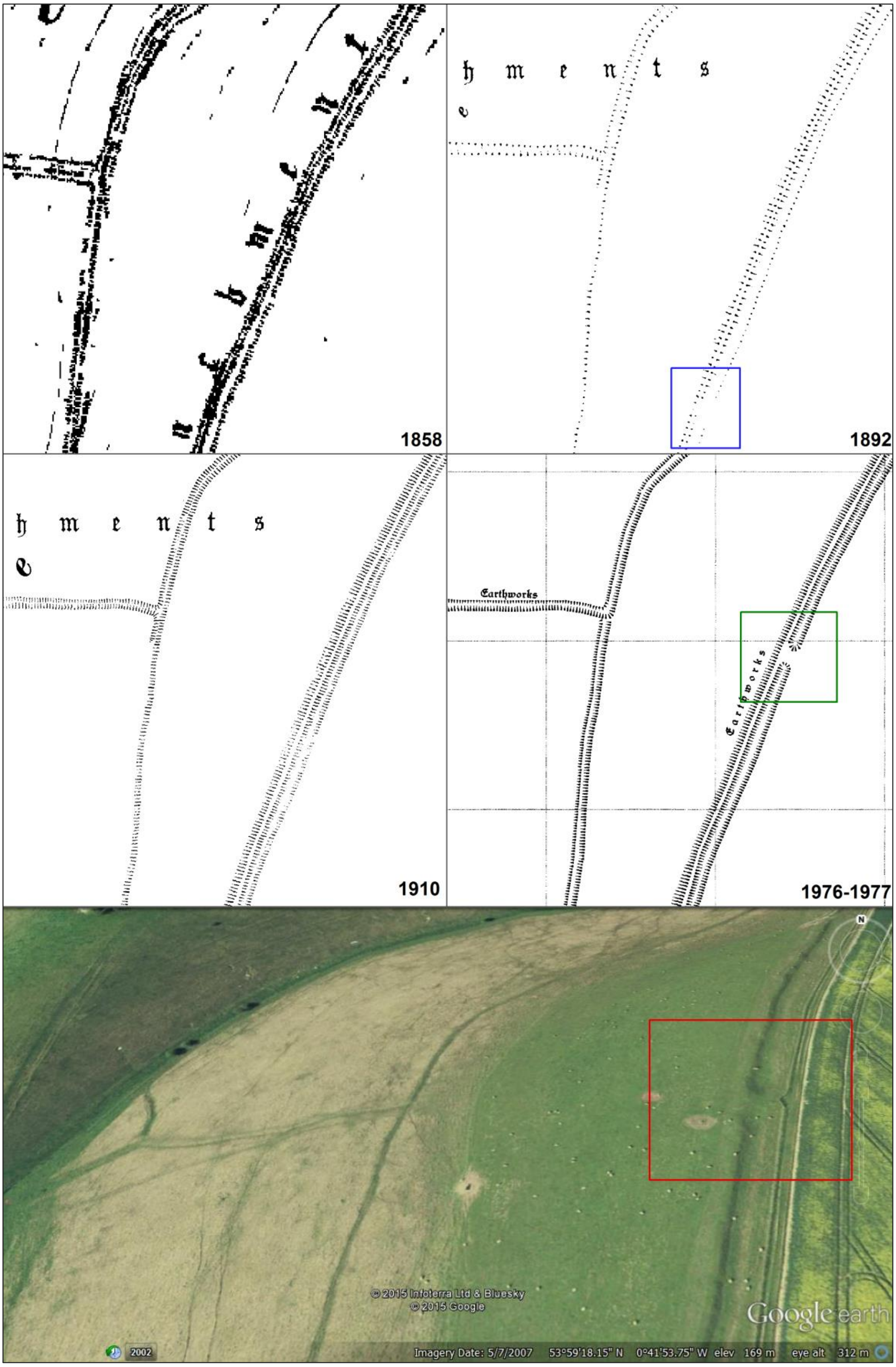


Fig 6.63 Possible Entrance dating to Phase 2a or later in the Tun Dale Zone
The first OS map which clearly shows the entrance visible on Google Earth (red box) is the 1976-1977 National Grid National Survey edition (green box). The 1892 Six Inch map shows a possible entrance slightly further to the south (blue box), although this is absent on earlier and later editions (e.g. 1858, 1910). Contains Ordnance Survey data © Crown copyright. Satellite imagery from Google Earth © 2015 Google, Infoterra Ltd and Bluesky.

It is unclear how far back in time the large landscape divisions reflected by civil parish boundaries (Fig 6.3) extend. When they were mapped by the Ordnance Survey in the nineteenth century, the civil parishes formalised and fossilised the accumulated remnants of land divisions from the medieval and post-medieval periods (see Chapter 7). As many parish boundaries re-use prehistoric features, some parishes may actually reflect far older units of land, although this is impossible to confirm. Huggate Dykes seems to have been particularly useful as a boundary not only because of its visibility in the landscape (it would have been recognisable), but also because its banks branch out in multiple directions around Huggate Pasture and therefore could be used to divide the land into many zones (three civil parishes utilise banks and ditches from the core of the monument and the northern part of the Tun Dale Zone, and a fourth parish uses earthworks at the junction of Tun Dale and Frendal Dale, slightly to the south; Fig 6.3). It would be fanciful to assume that these civil parishes are unchanged representations of their prehistoric counterparts. We cannot know if the land to the north of Huggate Dykes was tenured or owned—if indeed land could be owned in the Late Bronze Age or Iron Age—by the same person or group of people as the land to the south of the monument, and concepts such as 'territories' or 'districts' may not apply to this prehistoric landscape at all. Instead of attempting to identify regions where particular people lived or held particular tracts of land in tenure, it is more productive to study wider patterns of movement across this part of the Yorkshire Wolds.

The phasing and dating of the trackways that run both through and perpendicular to the core of Huggate Dykes are particularly difficult, but it is probable that, like the earthworks, they were constructed in multiple stages and modified with shifts in the patterns of movement that occurred on and around Huggate Pasture. The trackway or simple earthwork located mid-way down the eastern slope of Tun Dale appears to intersect the core of Huggate Dykes around the western edge of B5 (Fig 6.59). Mortimer (1905: 384-385, foldout map at front of volume) suggests that this trackway runs underneath the linear earthworks at the core of the monument—having been constructed before the earthworks and only later incorporated into them—and reappears further to the east along Line A. At the junction of Tun Dale and Frendal Dale, the trackway also intersects a branch of the Phase 1 ditch D4, which turns westwards and descends into the valley (Fig 6.62). An entrance has been cut through B4/D4/B5 in line with the most complicated portion of the trackway (Figs 6.62-6.63). The date of this entrance is unknown, and although it is hypothesised to post-date Phase 2a, when B5 was added. It is possible that it is an original feature built into the design of the Phase 1/Phase 2a banks, but it does not conclusively appear on OS maps until the twentieth century (Fig 6.63, green box). Thus, it may be a recent modification intended to facilitate movement between the valley bottom and the southern half of Huggate Pasture.

Another trackway runs perpendicular to Huggate Dykes at the eastern edge of the Eastern Zone; it splits into two branches, intersecting the monument on both sides of York Lane (Figs 6.60-6.61). Although it is mapped as an earthwork by Mortimer, the Stoertz's (1997) cropmarks and Google Earth imagery show that this linear feature comprises two narrow ditches (each about 1.5m wide) placed about 6m apart, and that further to the south it is incorporated into a ladder settlement (Fig 6.10). The morphology of the feature would suggest that it was used to direct movement, with the gap between the ditches being used as a trackway, rather than a barrier. This does not preclude it from being a boundary (see Section 7.1.1 for a discussion of boundaries versus barriers), and the same interpretation may be applied to the Tun Dale trackway, including its presumed continuation under the super-complex earthworks of the Huggate Dykes core. These routeways are likely to have provided conceptual divisions in the landscape, in much the same way that modern roads and railways are used to delineate different zones within the landscape (these sorts of delineations have given rise to expressions such as 'the wrong side of the tracks', which imply social differentiation on either side).

6.4 Modelled movement: routeways, but for whom?

The coincidence of trackways and a multi-phased linear earthwork with changing entrances at Huggate Dykes suggests that both feature types relate to organised, directed patterns of movement, which necessitates the development of a model for understanding how those patterns would have operated across, along and around the site. The model must take into account the types of agents undertaking this movement, and any constraints or preferences which might affect their relationships with the earthwork. By identifying the ways in which people and animals might have moved through the landscape around Huggate Dykes irrespective of the earthwork and its related trackways (i.e. purposely not including these features in the model in order to avoid circular arguments), we can begin to understand why it was created where it was, and how it came to affect the movement of particular agents. Throughout the desk-based research and fieldwork undertaken by this project, movement was recurring theme, and yet this movement was almost invariably inferred from the presence of linear earthworks, trackways and other archaeological features. In order to investigate the variables which might have led to particular patterns of movement (which would have become formalised by the construction of linear earthworks and trackways), rather than others (which would not be visible archaeologically), least cost modelling was performed with ArcGIS.

Least cost models are used to calculate the areas (cost surfaces) or routes (cost paths) on a surface which are least and most costly, given a set of weighted variables. In archaeological terms, they can be used to test which factors might have been most important (or, conversely, most costly) to the people moving through a landscape. These variables may include slope, elevation, proximity to other features or any other factor which is quantifiable within the data set being analysed, and the consequent flexibility means that the requirements of different types of agents or different situations may be explored and compared. The first least cost model generated by this project was for a journey between Huggate Dykes and Wetwang-Garton Slack and is presented in Section 4.2.3. This model uses a 50m DTM (OS Terrain 50 DTM), which was the highest resolution available for the majority of the project. The release of a 5m DTM in 2015 (OS Terrain 5 DTM; see Section 3.2.2) meant that the least cost modelling could be re-done with a higher-resolution surface, and the models presented below reflect this new DTM. They explore the hypothesis that earthworks were laid out to enable socially-acceptable movement, without relying on the earthworks or trackways as variables. Thus, if the linear earthworks within the analysed area match one particular model more than the others, then the variables used in that model may have been most important to the people who constructed the earthworks.

Expanding upon the 50m DTM least cost model from Chapter 4, a total of four models (A-D) and three routes (1-3) were proposed. Three variables in the terrain—slope, elevation and proximity to earlier monuments—were taken into account and weighted for different actors (Table 6.2). With regard to slope and elevation, it was assumed that people and sheep would have similar weighted costs, and that cows would require a different set of weights due to their general dislike of steep slopes and additional water requirements (Mueggler 1965; Willms 1990). Whereas people may be able to climb very steep or even near-vertical slopes, cows prefer flatter ground and are generally unable or unwilling to climb slopes of more than 40% (ibid.). However, if a person intended to travel by vehicle, or if that person did not wish to spend any unnecessary effort climbing hills (e.g. if the person were disabled, burdened with a heavy load or just slightly lazy), then that person would prefer to avoid steep slopes, much like the cows. As people's physical abilities and desires are diverse and contextual, a linear system of weights was used for the slope [person] variable (Table 6.2). In contrast, the weights assigned to the slope [cow] variable attempt to capture the physical abilities of these animals, who would not be able to climb the steepest slopes of the Wolds. Elevation was weighted in a similar manner for both the [person] and [cow] variables: people were assumed to have a linear relationship with elevation, preferring to travel in low, well-protected areas of the Wolds, whilst cows would prefer lower elevations, but would venture higher if water was available (see Willms 1990 for a discussion of water-related movement in modern Canadian cattle). The proximity to earlier monuments variable was not assigned a set of [cow] values. Cows and sheep would not, presumably, attach any importance to barrows, and therefore only people would use this particular variable. The weights assigned to these three variables should not be considered absolute, independent values which reflect actual journeys in the prehistoric past. Rather, it is by comparing the [person] and [cow] variables within the same route that meaning might be gleaned; in other words, these weights are best understood in relation to each other.

Terrain Variable	Reclassified Value	Variable Weight (1-10, Increasing Cost)		Notes and Interpretation
		Person (with/without Sheep)	**Cow**	
Slope (% rise)	1	1	1	0-10%
	2	2	1	10-20%
	3	3	2	20-30%
	4	4	3	30-40%
	5	5	5	40-50%
	6	6	7	50-60%
	7	7	9	60-70%
	8	8	10	70-80%
	9	9	10	80-90%
	10	10	10	90-1000%+
	NO DATA	NO DATA	NO DATA	Not calculated
Elevation (m)	1	1	1	Cows should be happy here if vegetation is good; low ground more sheltered for people
	2	2	1	
	3	3	1	
	4	4	1	
	5	5	1	
	6	6	1	
	7	7	2	Elevations where access to water may be limited
	8	8	2	
	9	9	3	
	10	10	3	
	NO DATA	NO DATA	NO DATA	Not calculated
Earlier Monument (m)	10	1	n/a	Right next to a barrow
	50	1	n/a	Almost right next to a barrow
	100	2	n/a	Pretty close to a barrow
	150	2	n/a	
	200	3	n/a	Still pretty close to a barrow
	300	4	n/a	
	400	5	n/a	Getting a bit far away but the dead are still nearby
	500	6	n/a	
	NO DATA	10	n/a	More than 500m away from a barrow

Table 6.2 Weighted variables used in the least cost modelling for Huggate Dykes
Proximity to earlier monuments (calculated to include a distance of 500m or less) is used to capture potential interaction with the ancient dead (see Table 6.3, Models C-D). Visibility of barrows could serve as another variable to account for this interaction; this was attempted with a cumulative viewshed that would have used closely-spaced observer points distributed evenly across the study area (in order to approximate a total viewshed, which would have required a supercomputer) but this required more computational power than was available for the project. Thus, visual connection with earlier monuments was inferred from proximity, which serves as a proxy for interaction.

To explore these three possible variables (slope, elevation and proximity to earlier monuments) and four possible actors (people, sheep, cows and the ancestral dead), four models (A-D) were developed (Table 6.3). Each of these models produced a cost surface (Fig 6.64), which could be used to calculate routes, or cost paths, between places. In addition to the four actors listed above, the places where the models begin and end (the starting point and the destination) might also be considered actors within these journeys, since they dictate the least cost paths that are calculated. Using the land covered by the core zone of Huggate Dykes as a constant starting point, three different destinations (Wetwang-Garton Slack, Grimthorpe hillfort and the Rudston earlier monument complex) were used to create three different hypothetical routes (Routes 1-3). The combination of these four models and three routes results in twelve least cost paths (Fig 6.65-6.77), which may represent an even greater number of hypothetical journeys, depending on the motivations of the actors within each model (see Table 6.3 for four examples).

It is necessary to distinguish routes, here defined as physical paths across the landscape, from journeys, which are experienced movements along routes. This definition of a route differs slightly from Ingold's use of the same term; he situates routes within transport networks and contrasts them with the wayfaring trails of meshworks (Ingold 2007: 80-81; see Section 2.3.1). Prior to the completion of the least cost modelling, the category or categories of movement that the earthworks and trackways might represent—if Ingold's categories are to be employed in this context—remained unclear, and therefore it seemed premature to make such a distinction in the formulation of the least cost models and parameters. Routes 1-3 may represent any category of movement (transport, wayfaring or a combination of the two), and it is Models A-D, with their associated hypothetical journeys, which may help to resolve the more theoretical aspects of the patterns of movement that occurred around Huggate Dykes. It is the social aspects of those journeys which are of primary interest to this study, rather than the exact routes which the journeys may have taken. People may move along the same route with the same method of transportation on any number of occasions; a single road and a wagon pulled by a team of horses may be used for everyday travel between one's home and one's place of work, as well as for more unusual or infrequent events, such as a funeral procession to commemorate one's deceased relative (see, for example, Mortimer 1978: 15). The variables used to construct the road may serve both of these journeys—the everyday and the exceptional—equally well, and thus the road can only suggest general patterns of motivations and movement, rather than a single, specific reason for its construction.

Model		Variables (% Influence in Model)	Potential Actors	Example of a Hypothetical Journey for this Model
A	Version 1 (50m DTM)	70% Slope [person] 30% Elevation [person]	People Sheep	A shepherd drives her sheep away from Huggate Pasture. She is keen to avoid steep slopes and very high hills but will climb them if she must (her sheep do not mind).
	Version 2 (5m DTM)			
B		80% Slope [cow] 20% Elevation [cow]	People Sheep Cows	During a gathering of neighbouring communities, a family acquire a cow through a new alliance. When the gathering is over and it comes time to return home, the cow will not walk on steep slopes and needs access to water, which is scarce on the highest wolds.
C		45% Slope [cow] 45% Earlier Monuments [person] 10% Elevation [cow]	People Sheep Cows The dead	A teenage boy is tasked with looking after his family's flock of sheep, and his cousin is put in charge of her family's cow. Whilst the teenagers are out driving their animals between pastures, they visit the barrows of legendary ancestors and tell each other stories about the mysterious monuments. They eat their lunch in the shadow of a particularly impressive barrow.
D		70% Slope [cow] 20% Earlier Monuments [person] 10% Elevation [cow]	People Sheep Cows The dead	A shepherd meets a wandering stranger on Huggate Pasture. The stranger wants to exchange a cow that he has brought with him for some iron objects made by the shepherd's community. As she leads the stranger to her family's farm, she points out barrows along the way and tells him who her ancestors were as they continue walking (they do not linger at the barrows).

Table 6.3 Least cost models A-D, including their constituent variables and actors
Each model may represent a multitude of different journeys, undertaken by all or most of the actors listed. Examples of journeys which might apply have been suggested; these are by no means exhaustive or based on historically factual events (they have proposed based on general knowledge of the region in later prehistory).

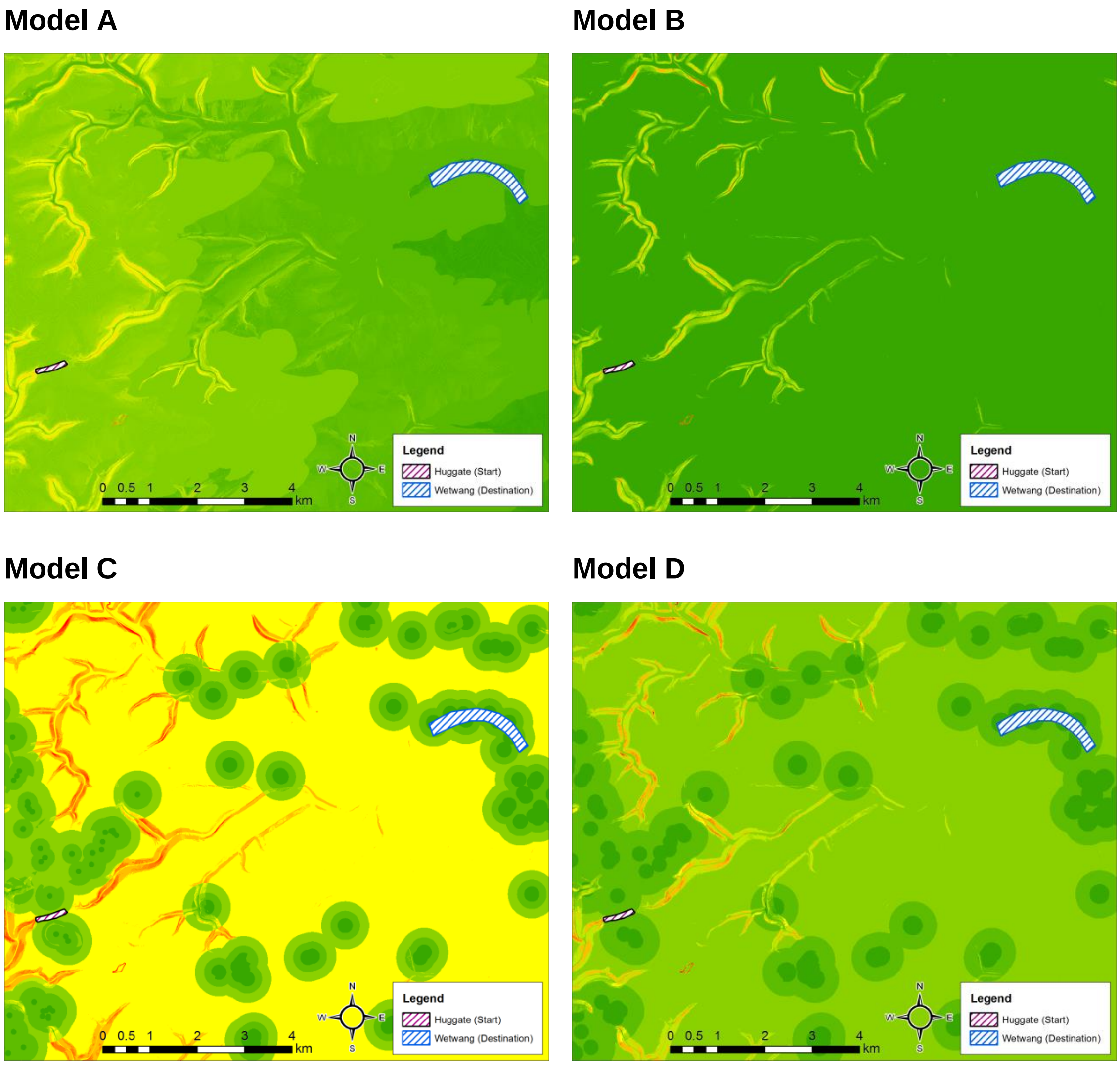


Fig 6.64 Cost surfaces for Models A-D, showing the area around Route 1
Green areas are low cost and red areas are high cost, based on the variables within each model (see Tables 6.2-6.3) and the OS Terrain 5 DTM. The locations of Huggate Dykes and Wetwang-Garton Slack are indicated.

6.4.1 Route 1: Huggate to Wetwang-Garton Slack

Wetwang-Garton Slack was chosen as the first of the three destinations because it may possibly have been the home of at least some of the people who could have been using the land around Huggate Pasture for pasture in the Late Bronze Age or Early Iron Age—if indeed it was used for pasture, which is not an implausible assumption. Model A was originally calculated for Route 1 using a 50m DTM (Section 4.2.3), and it was re-done with the new 5m DTM (Fig 6.65). Comparing the two versions (Fig 6.66), the initial interpretation of the path—that its similarity to the linear earthworks between Huggate Dykes and Wetwang-Garton Slack suggests that the variables used to generate the path and the variables used to plan the earthworks are the same—seems to be validated. Although the 50m DTM version of the model matches the earthworks in the eastern part of the map more closely than the 5m DTM version, the opposite is true in the west, where the 5m DTM version follows the course of Line A (see Chapter 4) almost exactly. Models B, C and D (Figs 6.67-6.69) diverge from the linear earthworks and there is far less overlap, which might suggest that the actors and variables accounted for by those models did not play a key role in the objectives that the earthworks were intended to achieve.

Model B (Fig 6.67) indicates that a cow might avoid the path of Model A because it would prefer less variation in slope, and would therefore stay on the flatter high ground to the south of the Line A earthworks. The Model B cost past appears to show the sloping valleys where earthworks have been constructed acting as boundaries to the zone through which a cow might move. Combining the information provided by Models A and B, we could conclude that linear earthworks facilitated the movement of people and maybe sheep, but tended to act as a boundary to the natural movement of cattle. In a way, this harks back to Mortimer’s (1905: 376-377) interpretation that the earthworks were related to the driving and protection of cattle, with the large enclosures formed by multiple earthworks serving as places to keep the animals when they were not being moved. The results from Model B show that cows would favour the gaps between earthworks and therefore lend credence to the idea that the earthworks divided up areas of pasture. Although the movement of cattle may not have been the primary concern of the earthwork builders, it cannot be completely excluded as a possible motivation for the construction of such an elaborate system of banks and ditches. Moreover, although the majority of the least cost path generated by Model B does not intersect with the linear earthworks that appear to bound it, the Model B cost surface (Fig 6.64, top right) reveals that this area of the Wolds is almost entirely cow-friendly, with few high-cost areas (red). The majority of the map is low-cost (green), and the slopes of valleys tend to be medium-cost (yellow) and therefore not impossible for a cow to traverse. The routes of Line A and the Model A cost path follow the southern edge of one of these Model B medium-cost areas, and thus it should have been possible to drive cattle there.

Because cattle may or may not have been considered during the construction of earthworks, as indicated by Model B, it was decided that the third and fourth models should use the weighted slope and elevation values for cows, rather than for people (see Tables 6.2-6.3), in order to account for the possibility that they too may have been actors in earthwork-related patterns of movement. Models C (Fig 6.68) and D (Fig 6.69) yielded almost identical cost paths, neither of which matched the linear earthworks particularly well. There was some overlap around the junction of Line A and the Wetwang-Garton Slack earthwork, but proximity to earlier monuments does not appear to have been as significant a factor as the natural topography was in the design of the earthworks. In summary, Models A and B appear to represent the variables and actors used to create the linear earthworks between Huggate Dykes and Wetwang-Garton Slack better than Models C and D (Table 6.4).

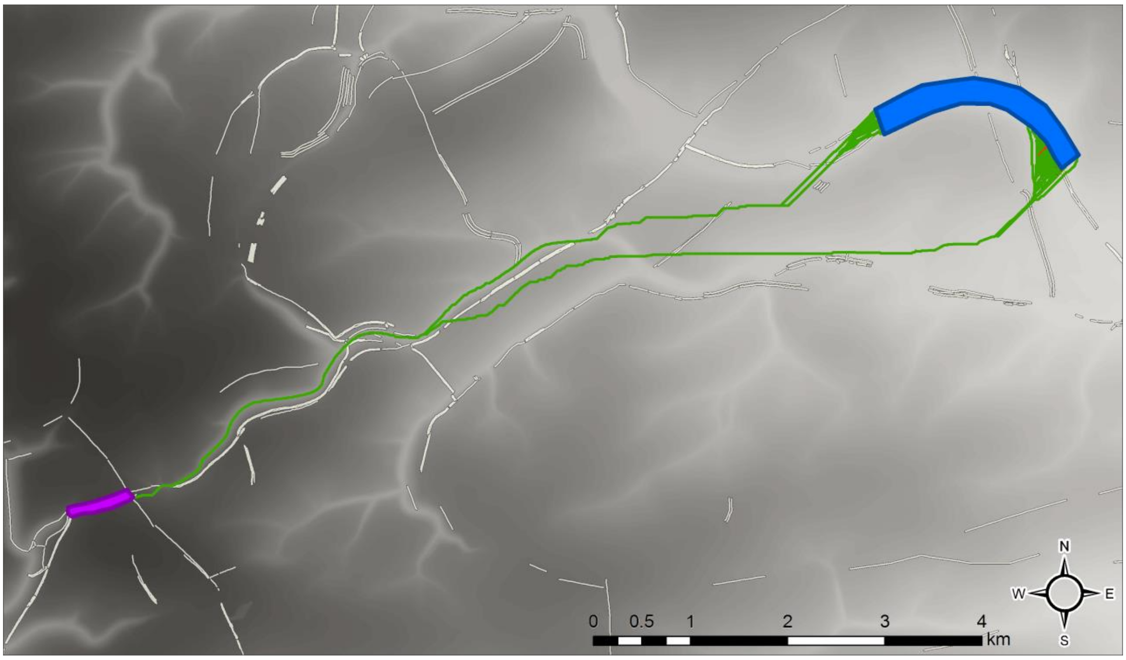


Fig 6.65 Route 1, Model A

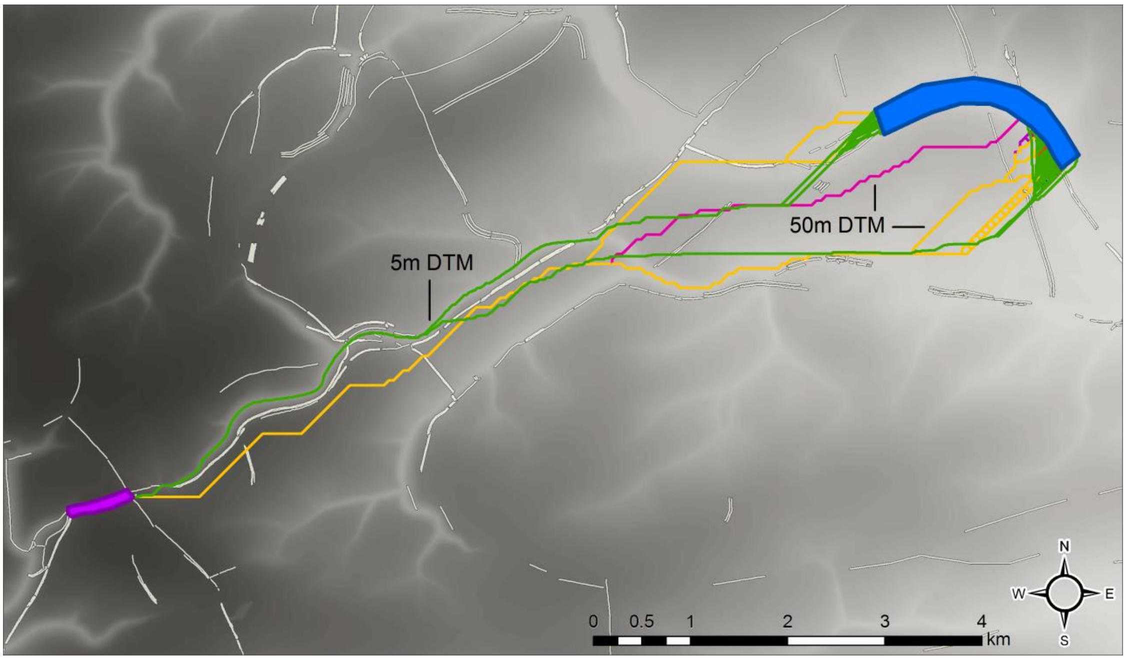


Fig 6.66 Comparison of 5m and 50m DTMs for Route 1, Model A

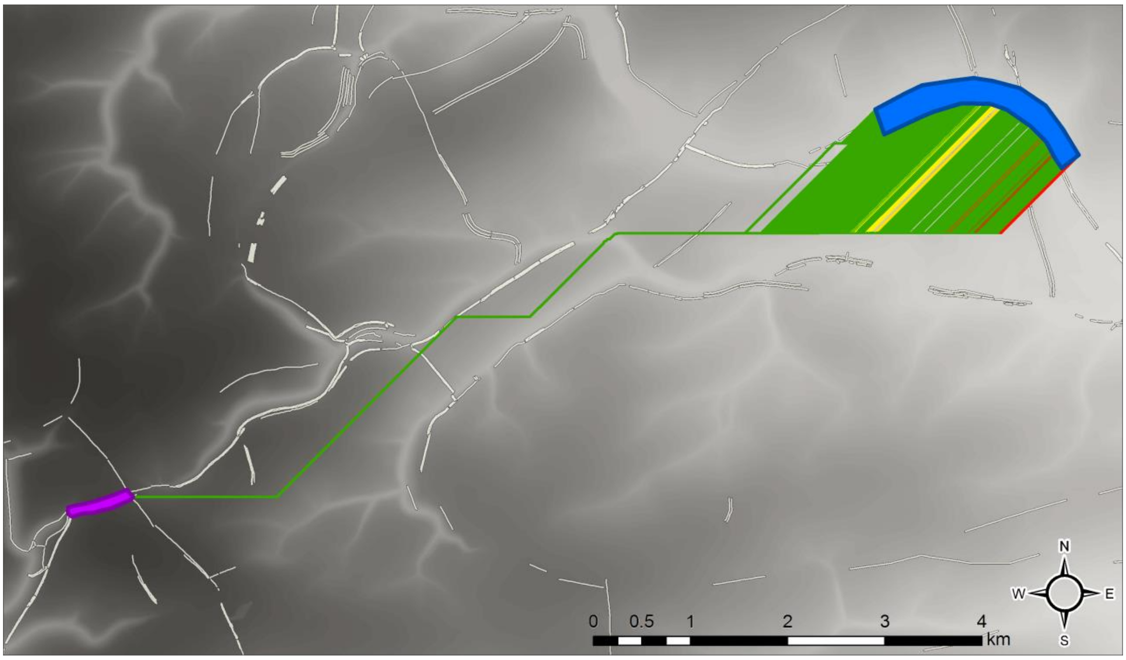


Fig 6.67 Route 1, Model B

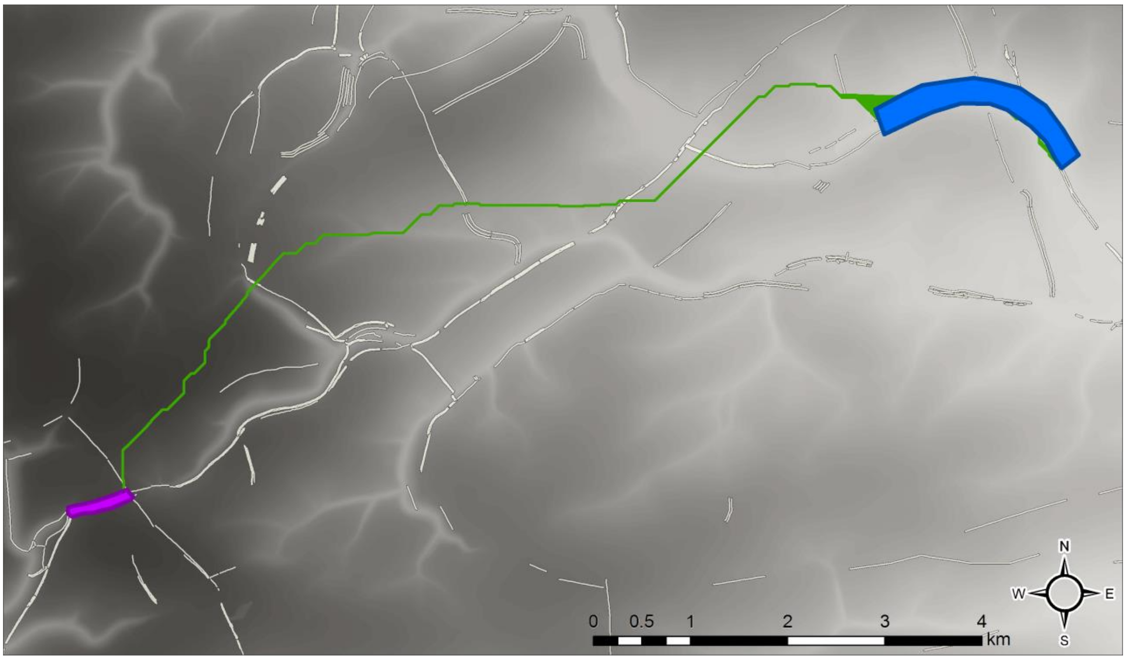


Fig 6.68 Route 1, Model C

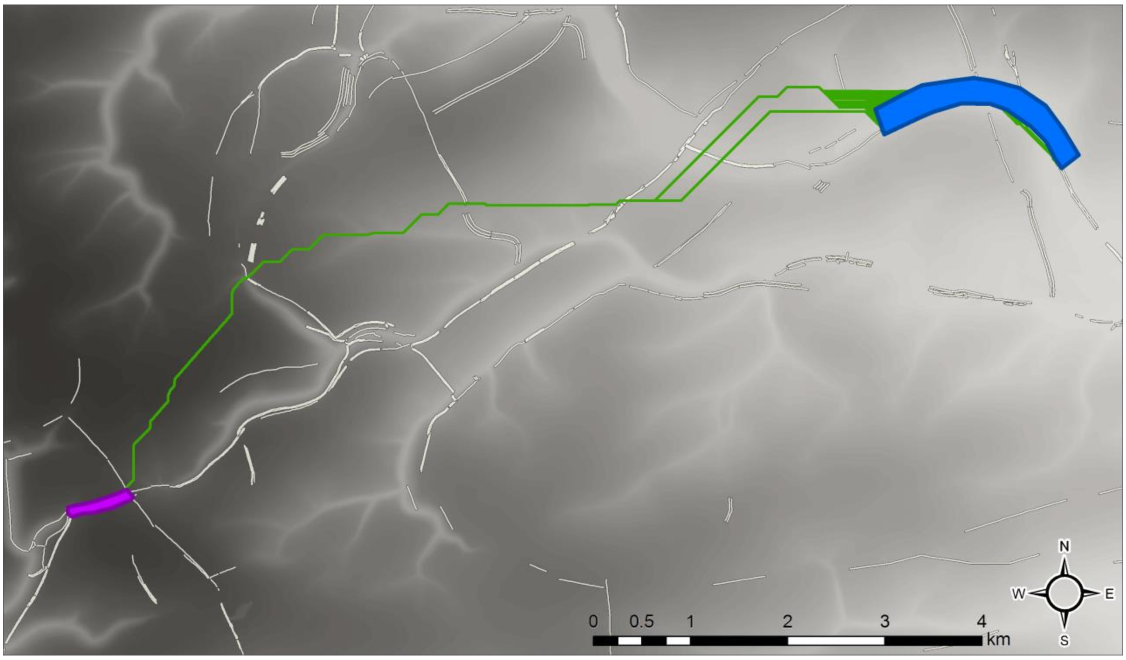


Fig 6.69 Route 1, Model D

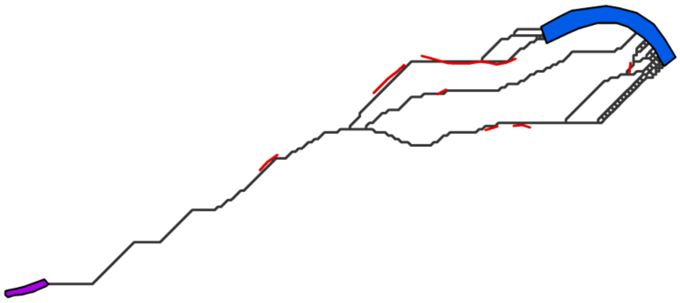
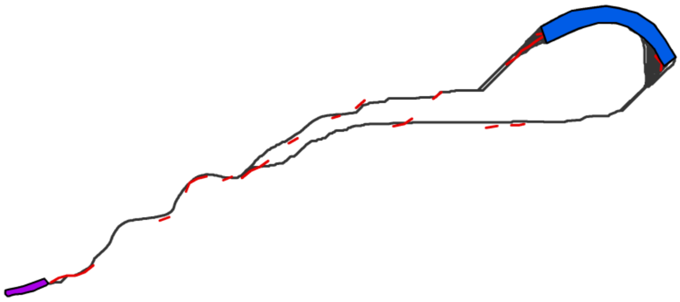
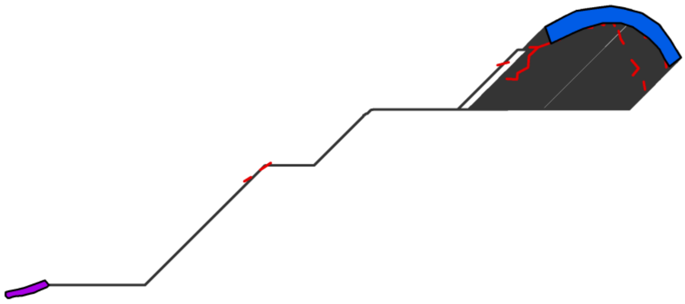
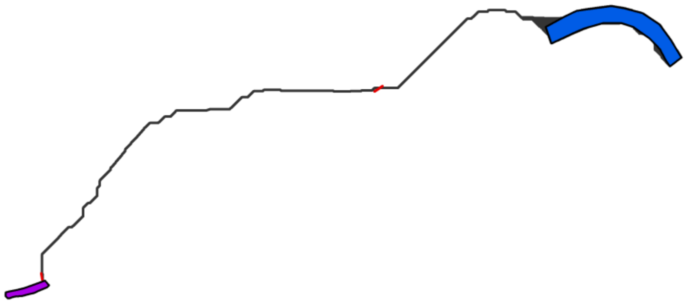
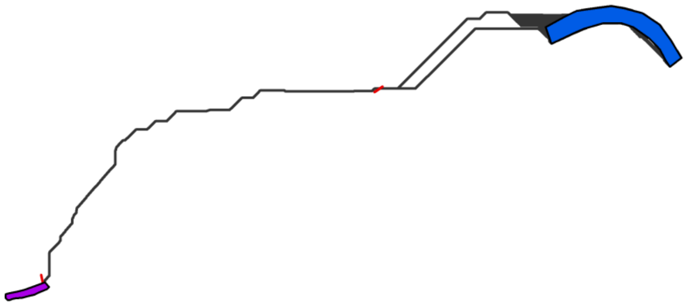
Model		Route 1: Huggate-Wetwang	Interpretation
A	Version 1 (50m DTM)		Model is a good representation of linear earthwork variables and actors.
	Version 2 (5m DTM)		Model is a very good representation of linear earthwork variables and actors.
B			Model may represent linear earthwork variables and actors.
C			Model does not appear to represent linear earthwork variables and actors.
D			Model does not appear to represent linear earthwork variables and actors.

Table 6.4 Comparison of Route 1 models
Least cost paths are shown in grey, and areas where linear earthworks overlap with the paths (buffered with a 50m tolerance) are marked in red.

6.4.2 Route 2: Huggate to Grimthorpe hillfort

The second destination chosen was Grimthorpe hillfort, which may have been constructed and used at or around the same time as the linear earthworks (see Section 1.4.1), and which also represents a bounded place. Again, Model A (Fig 6.70) produced a cost path which looks like the earthworks between the starting point and destination; it follows the parish boundary earthwork in Tun Dale almost exactly and then continues south-westwards through the bottom of the low, sheltered valley—downslope of the linear earthwork that runs along the edge of the high ground to the east—until it turns sharply westwards to reach the hillfort. The cost paths of Models B (Fig 6.71), C (Fig 6.72) and D (Fig 6.73) all leave Huggate Dykes to the north of Tun Dale, passing through a series of polygonal linear earthwork enclosures. These enclosures are organised like a honeycomb and divide up the high ground. The Model B cost path passes through the centre of the southernmost enclosure, and the cost paths for Models C and D follow the general course of the earthworks which form the three westernmost enclosures.

Exactly which model fits best with the paths of the earthworks is not clear (Table 6.5). They all follow some earthworks in the east, but not the same ones (Model A heads south, whereas Models B-D go north). This may suggest that the earthworks around Grimthorpe were constructed for a greater number of reasons than the section of Line A between Huggate Dykes and Wetwang, with a wider variety of movements being reflected here. Alternatively, the earthworks may not represent patterns of movement between Huggate Dykes and Grimthorpe at all, and may be related to journeys between and around other places.

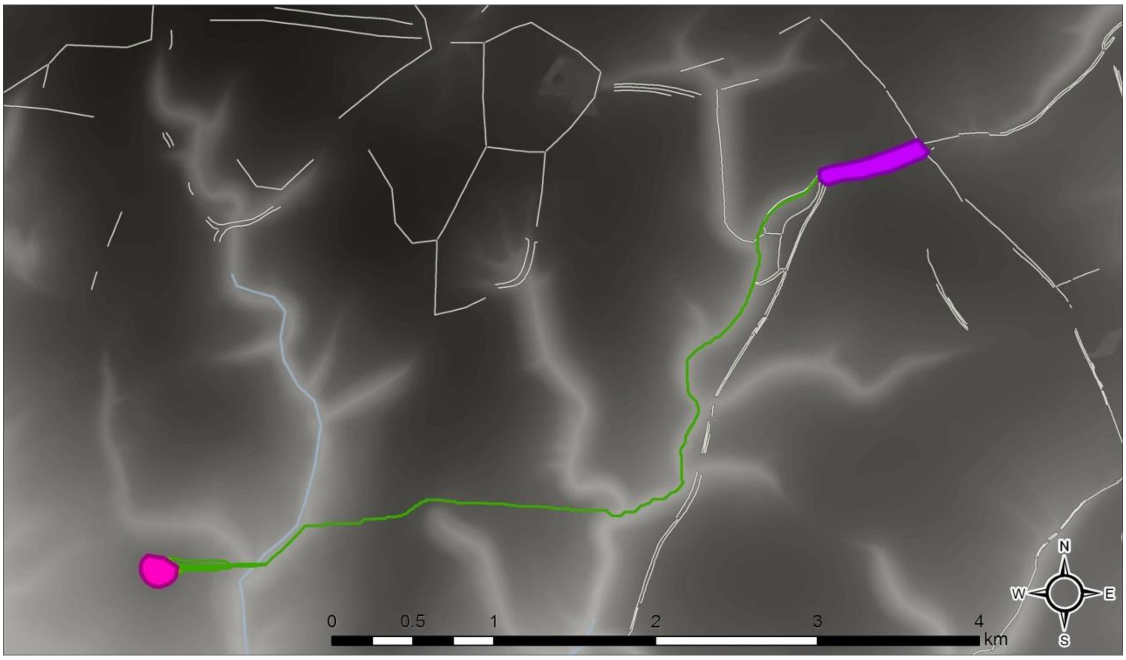


Fig 6.70 Route 2, Model A

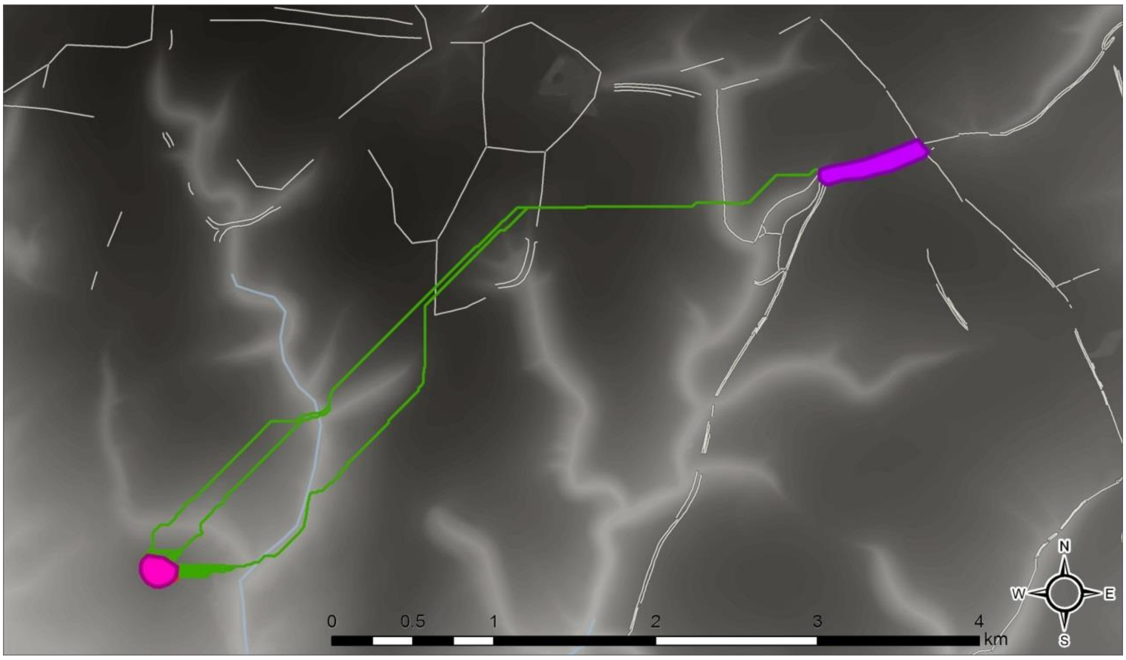


Fig 6.71 Route 2, Model B

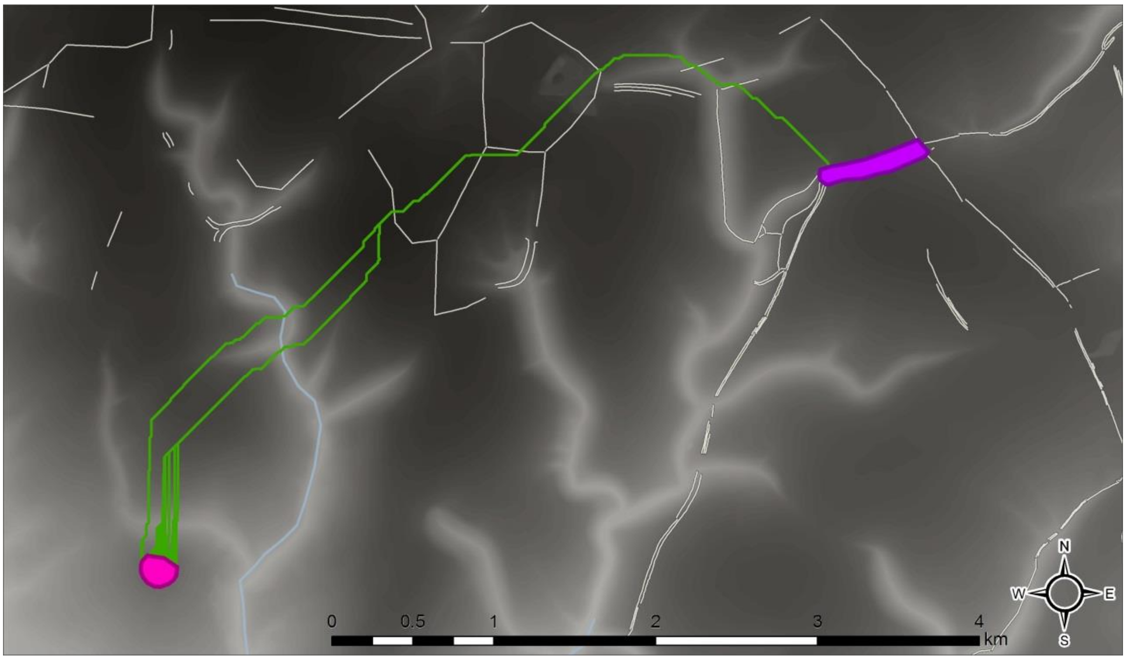


Fig 6.72 Route 2, Model C

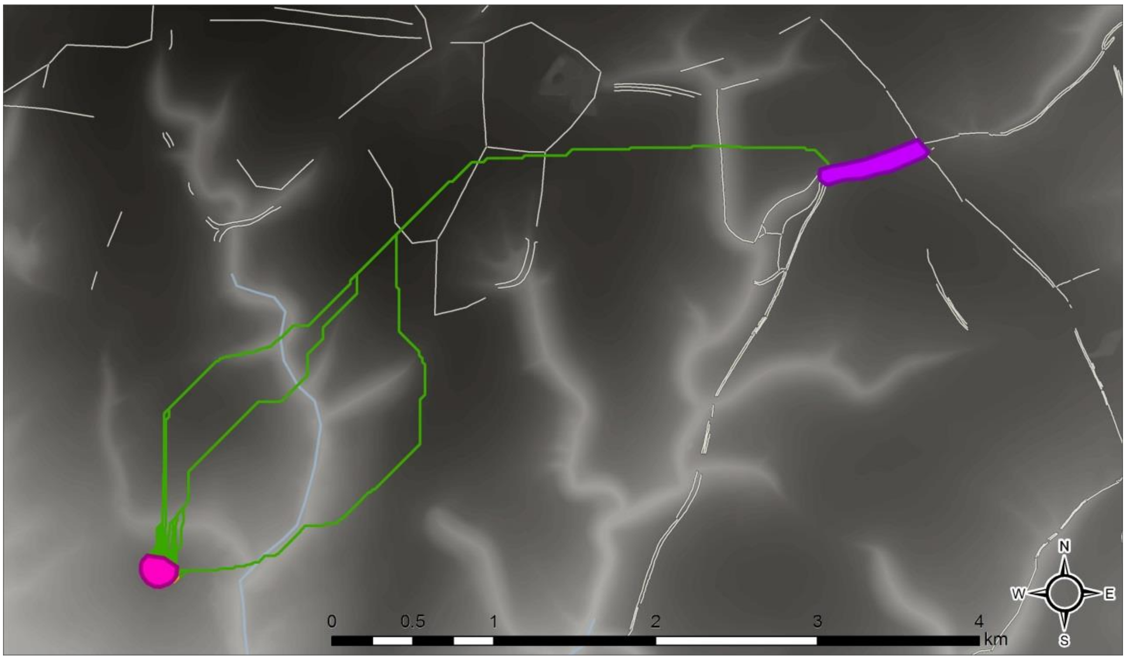


Fig 6.73 Route 2, Model D

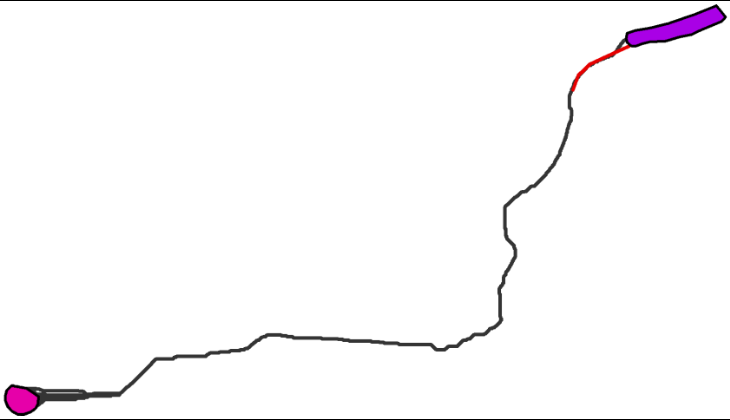
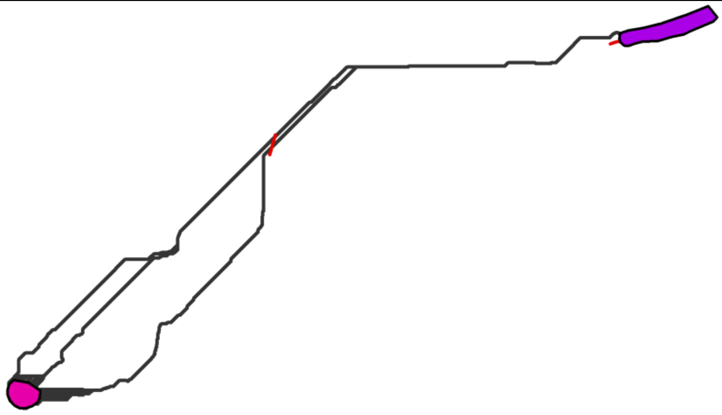
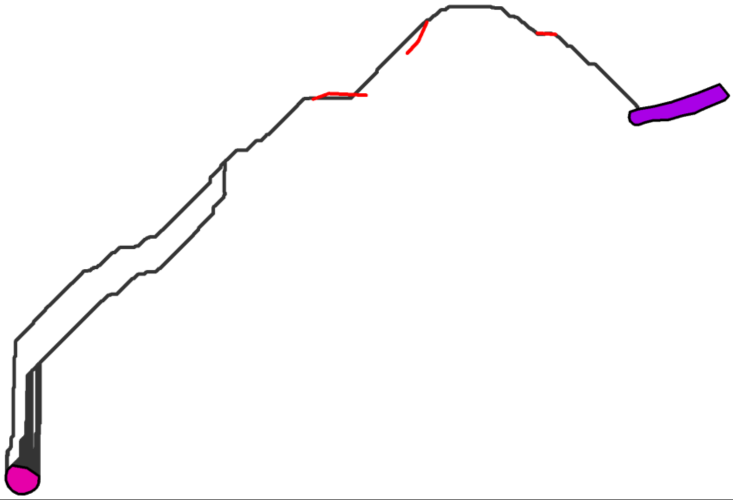
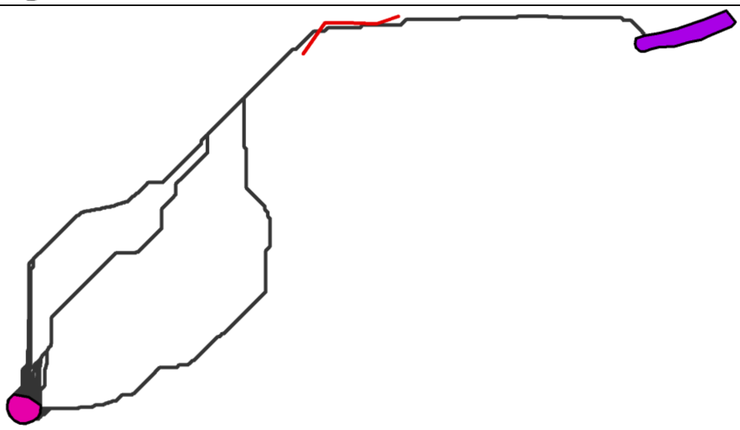
Model	Route 2: Huggate-Grimthorpe	Interpretation
A		Model may or may not represent linear earthwork variables and actors.
B		Model may or may not represent linear earthwork variables and actors.
C		Model may or may not represent linear earthwork variables and actors.
D		Model may or may not represent linear earthwork variables and actors.

Table 6.5 Comparison of Route 2 models
Least cost paths are shown in grey, and areas where linear earthworks overlap with the paths (buffered with a 50m tolerance) are marked in red.

6.4.3 Route 3: Huggate to Rudston earlier monument complex

The final destination chosen for least cost modelling was the complex of cursus monuments, henges and barrows that cluster around the Rudston Monolith. This place may not have been considered special or sacred by the time that the linear earthworks were constructed across the Yorkshire Wolds, but the now-ancient remains of these earlier monuments would have been noticeable at the very least. Two of the four models, Models A (Fig 6.74) and B (Fig 6.75), follow the general course of Line A as they head eastwards from Huggate Dykes, and upon reaching the south-eastern side of Wetwang-Garton Slack, they follow the gentle, low ground at the eastern edge of Wolds. Models C (Fig 6.76) and D (Fig 6.77) turn north-eastwards as they leave Huggate Dykes and follow the routes of Lines D-E-F and C (see Chapter 4). These two cost paths are within 50m of an earthwork for almost their entire lengths (Table 6.6, in red).

It seems fitting that journeys to a ceremonial complex full of earlier monuments might incorporate barrows and henges along the way (see Chapter 4), and thus it is tempting to conclude that Models C and D provide a far more convincing set of variables than do Models A and B (Table 6.6). However, all four models do follow the paths of linear earthworks, as with Route 2, so perhaps the question should not be one of identifying which model's variables would best represent a single, overarching pattern of movement governing the phenomenon of earthwork building; rather, the least cost modelling shows that it would be more productive to ask which earthworks might draw upon each of the types of movement that are explored by the four models, and whether or not particular actors might have relied on linear earthworks to guide their movement through the wider landscape more frequently than other actors did. In other words, the contextual specificity that is therefore required for to understand linear earthworks—as *individual* monuments with their own sets of intertwined, mobile actors—validates the use of an agency-conscious biographical approach to landscape.

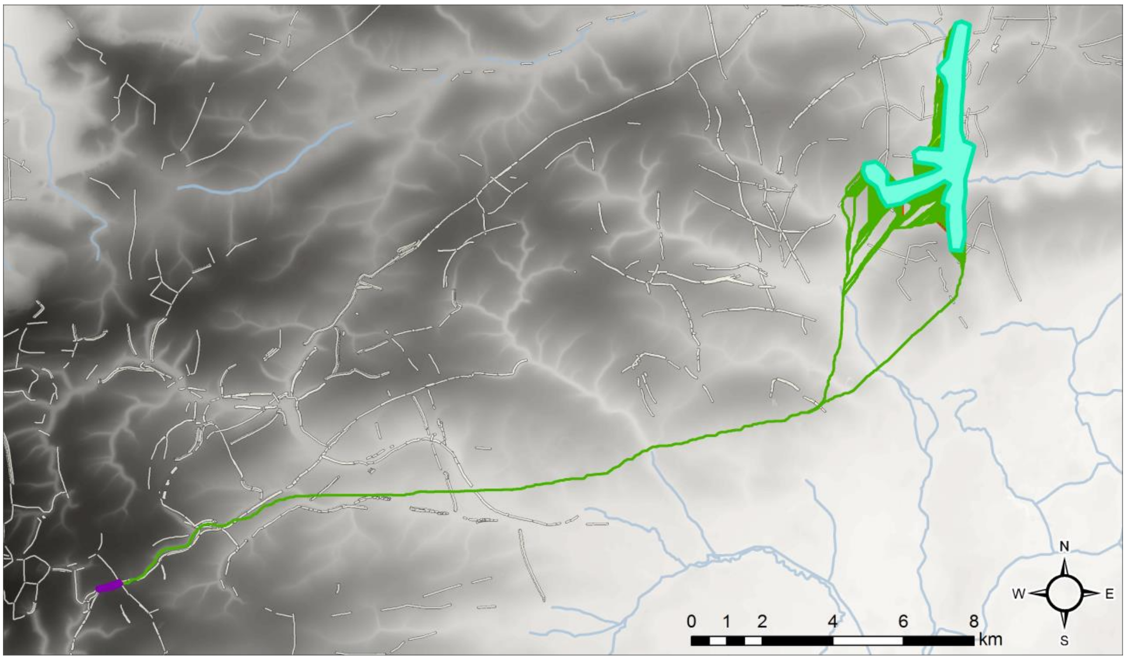


Fig 6.74 Route 3, Model A

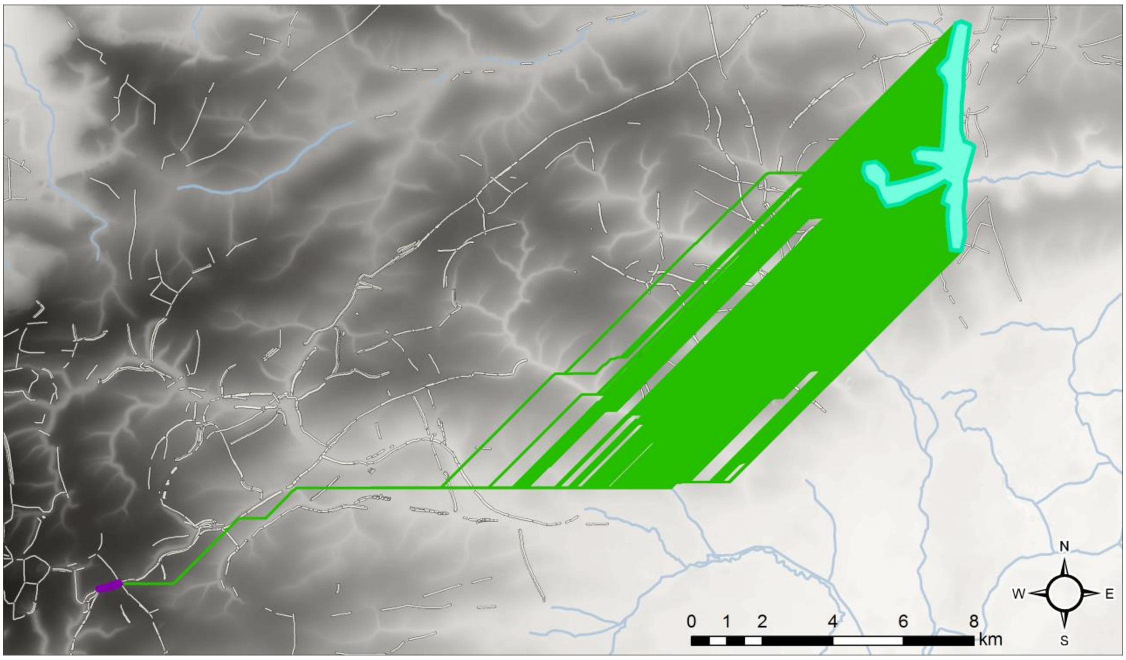


Fig 6.75 Route 3, Model B

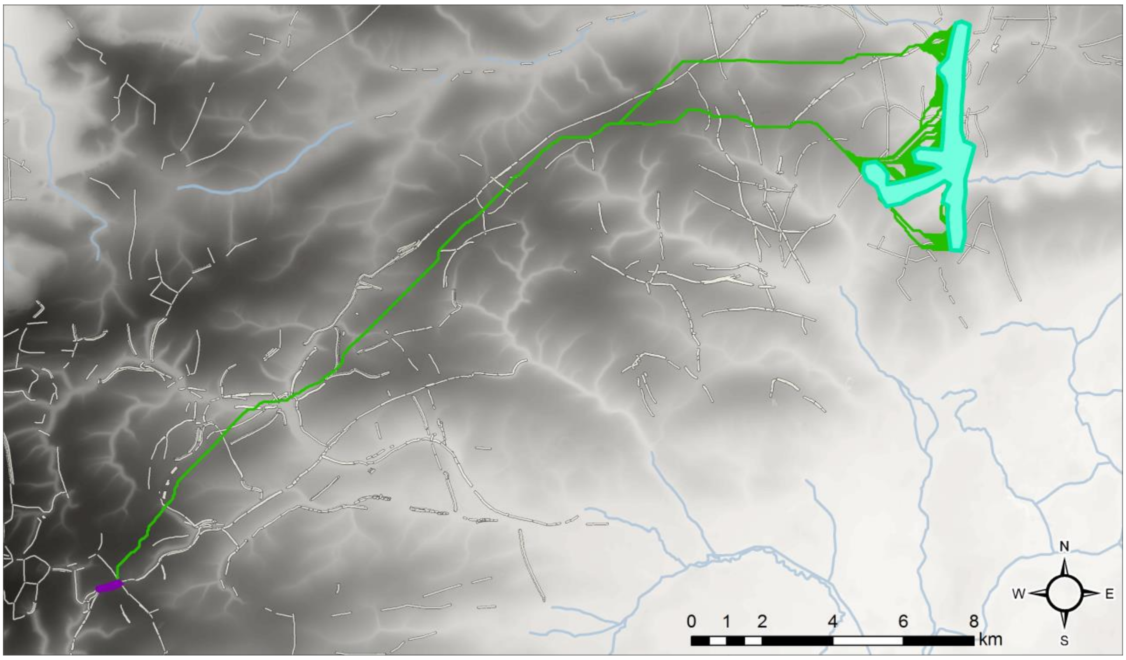


Fig 6.76 Route 3, Model C

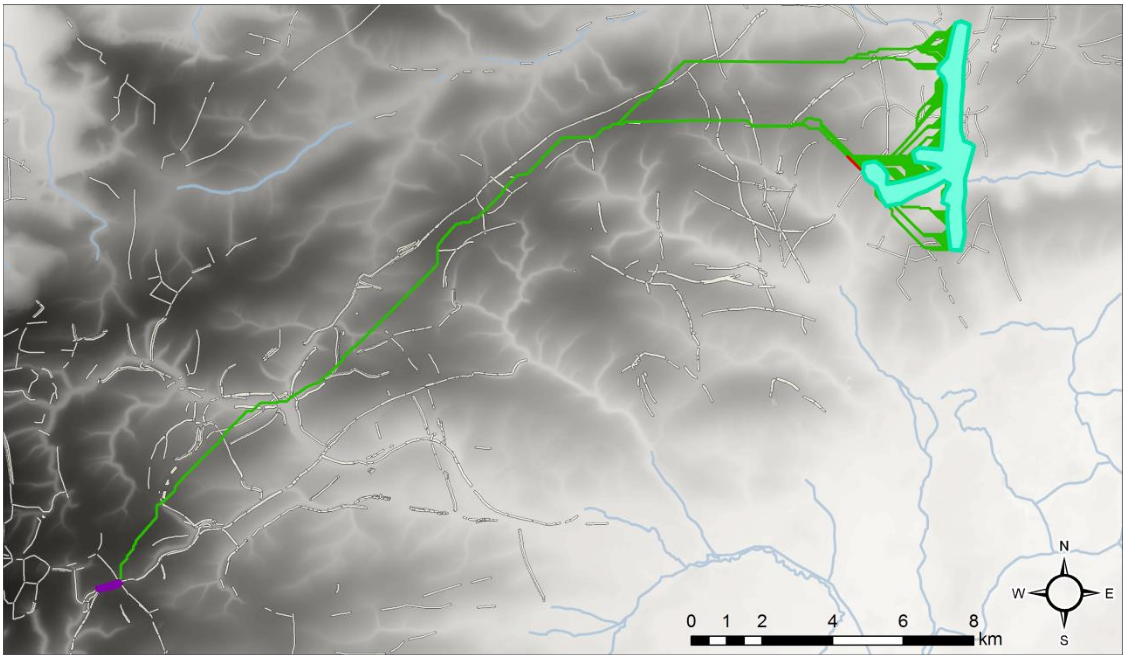


Fig 6.77 Route 3, Model D

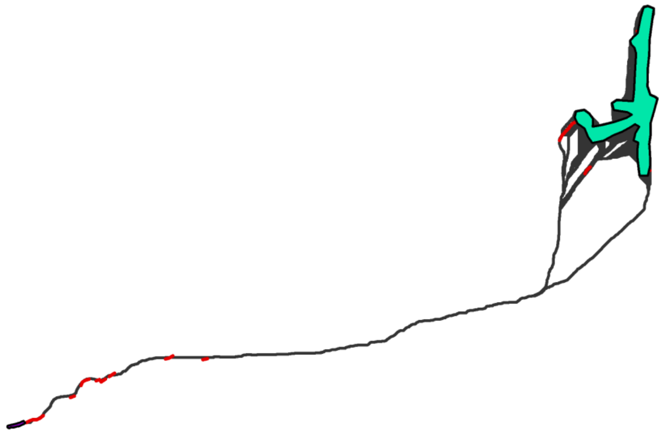
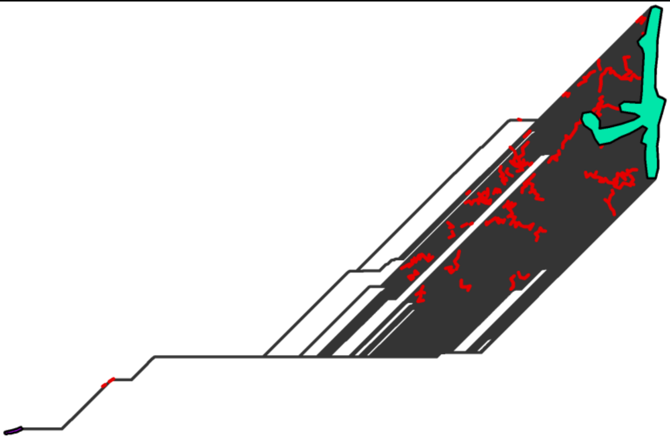
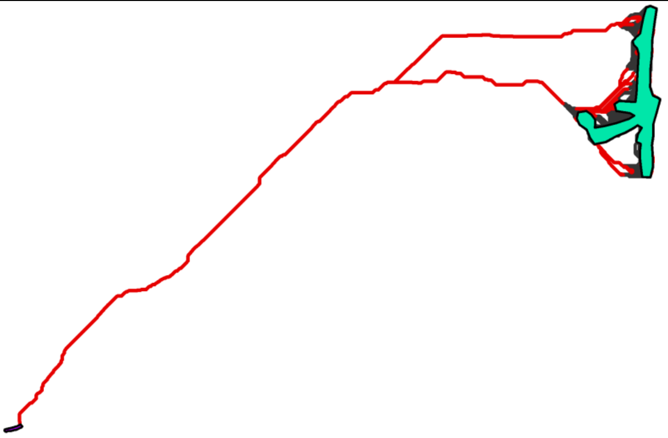
Model	Route 3: Huggate-Rudston	Interpretation
A		Model may represent linear earthwork variables and actors.
B		Model may represent linear earthwork variables and actors.
C		Model is a very good representation of linear earthwork variables and actors.
D		Model is a very good representation of linear earthwork variables and actors.

Table 6.6 Comparison of Route 3 models
Least cost paths are shown in grey, and areas where linear earthworks overlap with the paths (buffered with a 50m tolerance) are marked in red.

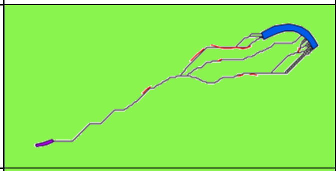
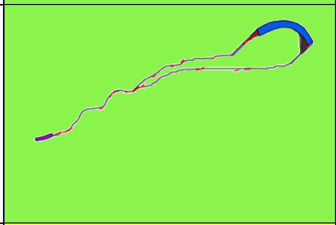
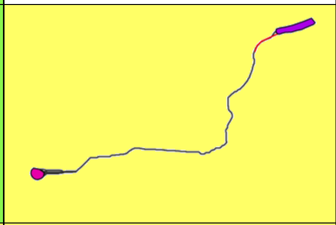
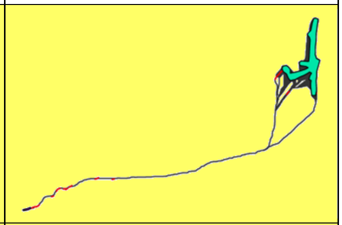
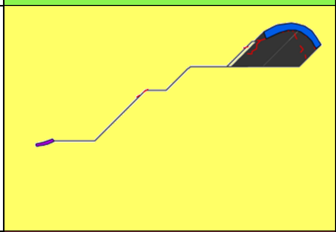
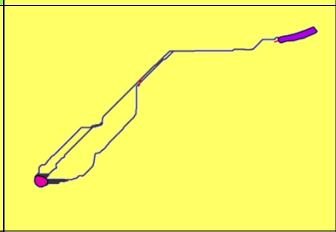
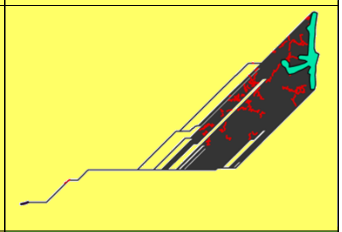
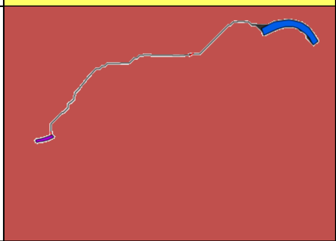
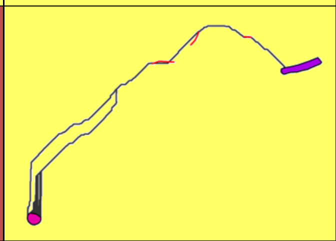
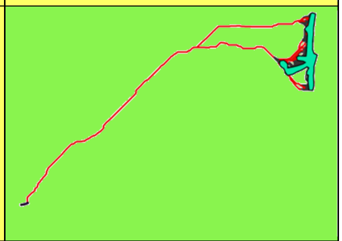
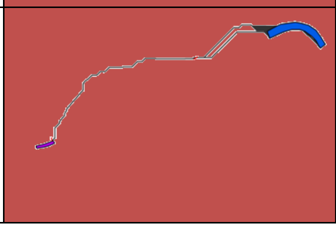
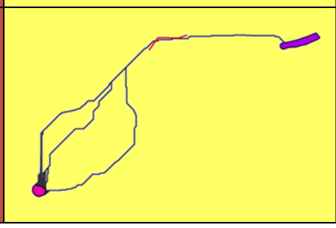
Model		Route 1: Huggate-Wetwang	Route 2: Huggate-Grimthorpe	Route 3: Huggate-Rudston
A	Version 1 (50m DTM)		n/a	n/a
	Version 2 (5m DTM)			
B				
C				
D				

Table 6.7 Summary of least cost models for Routes 1-3
Cells in green represent least cost paths (see Tables 6.4-6.6) in good agreement with nearby linear earthworks. Yellow cells represent possible agreement, and red cells represent little to no agreement. Each route has at least two models that are possible or good, and no single model definitively works for all three routes.

6.4.4 Discussion of results

Least cost modelling was conducted to explore the types of movement which may have led to the construction of the earthworks and trackways around Huggate Dykes. Of the four that were devised, no single model is able to adequately reflect the earthworks of all three routes, and yet there does appear to be a relationship between some earthworks and the least cost paths (Table 6.7). Model A works best for Route 1, whereas Models C and D work well for Route 3. Model B possibly works for all three routes, but is never the strongest or clearest explanation within any given route. Thus, it seems likely that linear earthworks represent a range of motivations and actors, which would have been spatially and historically contingent. They do appear to formalise patterns of movement, but not in a universal way that can be applied to all earthworks on the Yorkshire Wolds. This complex relationship between a myriad of actors and their choices regarding movement highlights the need to study earthworks not as parts of a uniform system of landscape organisation, but as individual, intertwined monuments with their own life histories. Considered together, the linear earthworks of the Wolds represent a tangled web or meshwork (Ingold 2007; see Section 7.1.2) of journeys which were performed by many actors over time (Fig 6.78).

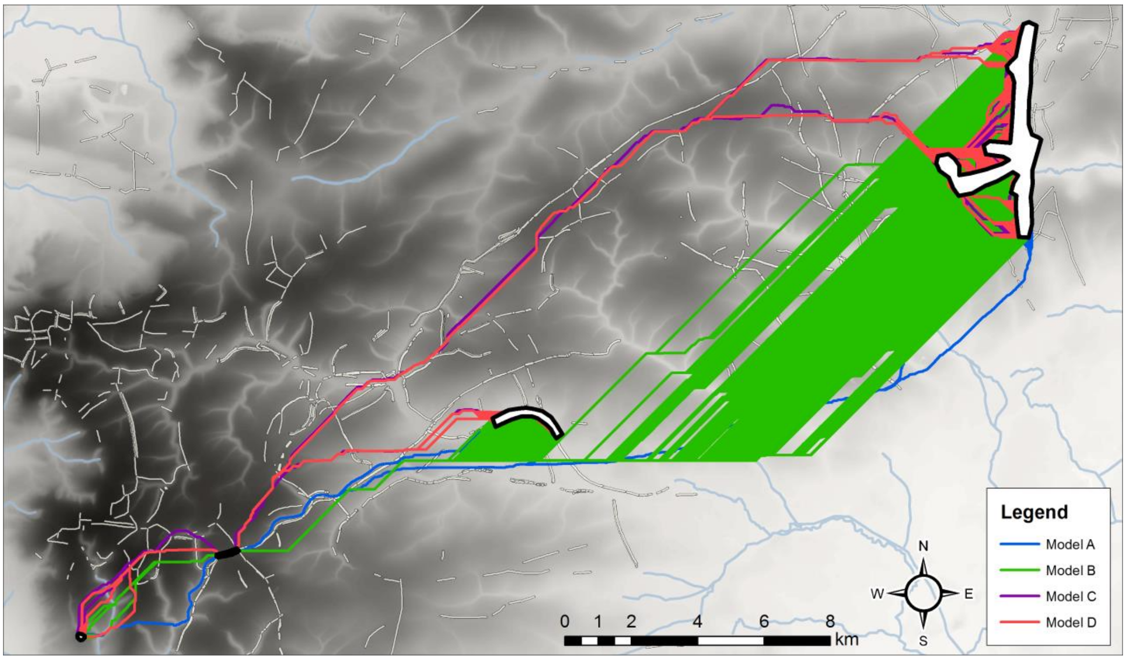


Fig 6.78 Meshwork of Routes 1-3, Models A-D

6.5 Intertwined biographies

This chapter has attempted to write the biography of the landscape at and around the linear earthwork called Huggate Dykes, drawing upon techniques such as map regression, geophysical survey, experiential fieldwork and least cost modelling. The earthwork was born in a place that, by the time of its construction in the Late Bronze Age, was already crowded with monuments and laden with meaning. It was built in three major phases, and a series of shifting entrances allowed access across it at various times in its life history. The trackways built under and around Huggate Dykes suggest that this was a place where movement happened, and questions regarding the nature of that movement have revealed the need for context-specific analysis. Computer modelling can suggest possibilities for how agency might be reflected by linear earthworks, but the interpretations gleaned from the relationships between particular earthworks and simulated journeys cannot necessarily be applied to others with confidence. This should not be viewed as problematic, though; by considering the plurality of the actors involved in the creation of linear earthwork landscapes, we avoid overly simplistic representations of the past. By recognising the complexity of the linear earthwork phenomenon, we allow particular earthworks' biographies to be understood on their own terms, rather than shoehorning them into a one-size-fits-all model for later prehistoric land division.

Many, if not all, of the linear earthworks of the Yorkshire Wolds probably have their roots in patterns of movement that were already ancient by the time of their construction in later prehistory. These patterns of movement would have been forged by not only people, but also livestock and, perhaps, the ancient dead (if the people or beings inside round barrows were afforded agency). Thus, the earthworks fossilise the meshworks and networks of not only the Late Bronze Age and Iron Age, but also potentially of other periods of prehistory, and of the generations of people and animals who used them after their original purpose had become obscured by time. It is to the wider context of these meshworks and intertwined biographies that the next chapter turns.

From a bovine paleoethological perspective (Model B)

1 We move
Through the valley
Down the slope
Eating as we go

5 We are content
Munching away
And resting when we tire

8 Up ahead
Strange white lines

10 We turn around

Chapter 7.

Moving through the land: boundaries, connectedness and the wider world

The webbe of our life, is of a mingled yarne, good and ill together

William Shakespeare (1623)
All's Well that Ends Well, Act IV, Scene 3

Delving deeper into the boundedness of linear earthwork landscapes, this chapter reflects on the social and cosmological impact of boundary creation. The previous chapters have explored the life histories of Wetwang-Garton Slack (Chapter 5) and Huggate Dykes (Chapter 6), which are connected not only with each other, but also with those of people, animals, spirits, things and other places. This chapter moves beyond the scale of site biographies to that of a landscape biography, and proposes how movement and the performance of boundary-making would have structured the agency that linear earthworks exercised within later prehistoric society on the Yorkshire Wolds, and within the wider world of Britain and Ireland.

7.1 From site biographies to a biography of landscape

Prehistoric monuments are often referred to as 'sites', implying that each exists in a particular, restricted location in space. By their very nature, linear earthworks are not sites in the traditional sense. Many run for several kilometres—alternative terms for these monuments are 'running' or 'travelling' earthworks (Fox 1929: 135)—and if particular earthwork segments are artificially separated to be studied as 'sites' (e.g. Chapters 5 and 6), then it is necessary to re-situate them within their wider contexts once the site-level analysis has been completed. A landscape biography constitutes more than the sum of the life histories of various monuments or places within a given landscape. Rather, it is the product of six major components—life histories, memory, agency, networks, meshworks and cosmology—which are tied together by a series of intertwined actions (Fig 7.1). The life histories of places are interconnected with those of other agents, and through the process of place-making, people experience and remember these life histories, keeping the places alive (see Tuan 1975: 152). It is agency that allows people to re-negotiate and re-imagine these memories, and agency occurs in networks, where people, places and other agents interact. Networks require some degree of journeying between places, both in the physical world and in perceived or mythical worlds. By mapping these journeys, it is possible to reconstruct the meshworks of agents (see Sections 6.4 and 7.1.2). When people journey through the landscape, creating their meshworks, they begin to understand their place in the world and develop cosmologies. These cosmologies then structure the ways in which people experience their own life histories, and the life histories of places. The creation of landscape biographies is a reflexive process in which the six components and their associated actions define and re-define each other. As they are interlinked, no single component can be truly separated and studied in isolation.

The linear earthworks at both Huggate Dykes and Wetwang-Garton Slack emerged in places that had already been monumentalised by the construction of Early Bronze Age round barrows (and, in the case of Wetwang-Garton Slack, a Neolithic long barrow). These funerary monuments would have been visible in the landscape at the time when the earthworks were first laid out, and it seems likely that people would have told stories about them, and may even have viewed the dead inside the barrows as their distant ancestors. Although the ancient dead may not have dramatically influenced the routes along which all earthworks were constructed (see Section 6.4), they do seem to have been ubiquitous in the land surrounding the earthworks (Sections 4.2.3 and 6.3.2). Thus, the histories which the barrows materialised would have become interconnected with the histories of the earthworks, and people would have re-negotiated their meanings as they monumentalised the landscape in new ways.

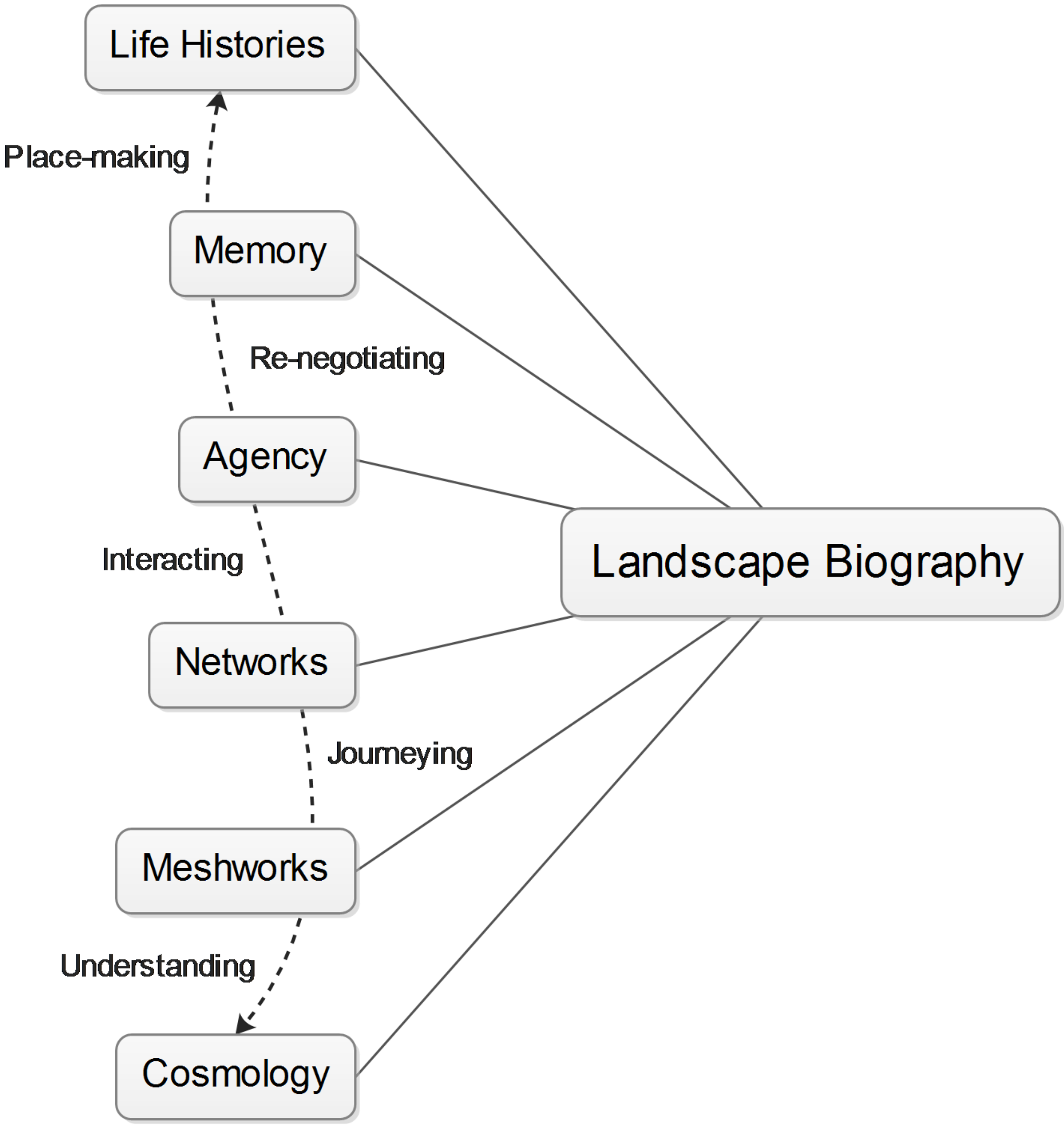


Fig 7.1 Deconstructing landscape biographies
Landscape biographies comprise the intertwined life histories of places and other agents. Through the process of place-making, these life histories are experienced and remembered by people. The re-negotiation and re-imagining of these memories requires agency, and agency involves the interaction of people, places, animals, non-person beings (spirits, deities) and objects in networks. Networks necessitate journeying between places, and by tracing the movement of agents during these journeys, it is possible to reconstruct meshworks. When people journey through the landscape in these meshworks, the landscape and its monuments help them to understand their world. This understanding results in the development of world views or cosmologies, which then shape the ways that people experience their own life histories, and the life histories of places. The creation of landscape biographies is a reflexive process involving the interplay amongst the components described above, and the six components are inextricable from each other.

Concepts such as networks (including Actor-Network Theory, e.g. Latour 1996, 2005), meshworks (Ingold 2007), entanglement (Hodder 2012) and assemblage theory (e.g. DeLanda 2006; Harris 2014) all explore the theme of connectedness (see Section 2.3.1). Networks and meshworks provide particularly useful models for integrating and making sense of biographies at different scales, as they allow us to trace connections amongst places, people, animals and things. Networks of connected people would have meant that earthworks could be constructed and maintained by a large workforce that transcended individual households or settlements. Mortimer (1905: 377) states that the ‘great system of earthworks’ across the area of the Wolds that he had surveyed and mapped ’represents the most laborious work ever undertaken and executed within its limits’. He recognises that the earthworks would have required more energy than the round barrows which preceded them, and this great expenditure of energy implies commitment to a particular landscape by a group of people with common goals. Giles (2012: 46) estimates that a single person constructing a single bank and ditch for the length of 100m would need to work for approximately 250 hours, or about a month’s worth of continuous work (based on labour calculations from Lock et al. 2005 and Shaw 1970). Using Giles’ figure of 100m/250hr, or 0.4m/hr, it would take one person approximately 12,000 hours to construct the super-complex core of Huggate Dykes, which has six bank-ditch pairs that each run for 800m (see Section 6.1). This equates to 500 days of continuous work (about one year, four months and two weeks), 1000 12-hour work days (about two years and nine months), 1500 8-hour work days (about four years, one month and ten days) or 3000 4-hour work days (about eight years, two months and three weeks).

However, it is likely that linear earthworks were laid out and built by families or communities, rather than by individuals (e.g. Sharples 2007, 2010); some earthworks appear to have been gang-dug in segments (see Mortimer 1905: 377; Giles 2012: 46-47), and the geophysical surveys conducted at Huggate Dykes (Section 6.3.4) reveal that the earliest phase of the monument may be the product of this type of labour. Moreover, the core of Huggate Dykes was probably dug in at least three phases (Section 6.3.6), and thus each phase would have only required approximately 4000 hours of labour. If a family of five were to pool their labour to build the monument, one phase would require approximately 800 hours (200 4-hour work days, or about six months and three weeks), and all three phases would require 2400 hours (600 4-hour work days, or just under one year and eight months). Spending this much time constructing the earthwork would probably have had a negative impact on the family's ability to farm, at least during busy times during the agricultural calendar (e.g. harvest time, lambing). By drawing together labour from the wider community, or from multiple communities with a common goal, it would be possible to build Huggate Dykes in far less time, with less disruption to other activities. A team of 50 people could construct one of the three phases of Huggate Dykes in 80 hours (20 4-hour work days), and 100 people could accomplish the task in 40 hours (10 4-hour work days), which is equivalent to the modern work week in most Western countries. That would mean that the entire super-complex core of Huggate Dykes could be built in less than a month, possibly spread out over several years or generations. These estimates are summarised in Table 7.1; they should not be used to identify a definitive window of time in which Huggate Dykes was built, but rather to illustrate the impact that a large labour force would have had on the construction process.

	Number of People and Length of Work Day							
Portion of Earthwork	*1*		*5*		*50*		*100*	
	4-h day	*8-h day*	*4-h day*	*8-h day*	*4-h day*	*8-h day*	*4-h day*	*8-h day*
Single phase (1600m or 4000h)	1000 days or 2.74 years	500 days or 1.37 years	200 days or 0.55 years	100 days or 0.27 years	20 days or 0.05 years	10 days or 0.03 years	10 days or 0.03 years	5 days or 0.01 years
All three phases (4800m or 12,000h)	3000 days or 8.22 years	1500 days or 4.11 years	600 days or 1.66 years	300 days or 0.82 years	60 days or 0.16 years	30 days or 0.08 years	30 days or 0.08 years	15 days or 0.04 years

Table 7.1 Estimated lengths of time needed to construct the super-complex core of Huggate Dykes, using different labour inputs
Calculations based on Giles' (2012: 46) estimation that an individual could construct a 100m length of earthwork in 250 hours, which is equivalent to a rate of 0.4m/h. The time dedicated to earthwork construction each day would depend on factors such as other tasks that could not be postponed (e.g. agricultural harvests), hours of daylight and weather conditions. The physical abilities and general energy level of the workforce would also be crucial; if they were too exhausted to complete an 8-hour day, then the construction process would take longer. Whatever the size of the group, this type of manual labour would require a steady source of hydration and food, especially if working days were long.

In addition to making the task of earthwork construction quicker, the aggregation of labour would help to reinforce social bonds amongst various sectors of the community (see e.g. Wigley 2007; Sharples 2007, 2010; Giles 2012; Løveschal 2014). Sharples (2007, 2010: 116ff) employs the phrase *labour as potlatch* in order to convey the input and exchange of labour which would have been required to build later prehistoric boundaries such as palisades and hillfort ramparts, and the resources needed ‘to keep everyone content by supplying them with food and alcohol’ (2010: 123). Similarly, the construction of linear earthworks on the Yorkshire Wolds may have involved a sort of potlatch, with an excess of food being used to display the agency or status of a particular individual or family. Alternatively, they may have been more like a modern potluck, with all of the builders contributing roughly equal amounts of fairly ordinary food, and roughly equal amounts of agency. In all likelihood, both versions—the potlatch and the potluck—are likely to have been true; some earthworks may have been constructed by all members of a community without any great degree or hierarchy or demonstration of status, whereas others could have served as routes to power for particular individuals. Whether or not earthwork construction events were intended to allow everyone an equal amount of control, even people who were not physically able or willing to dig the earthwork ditches could and probably did partake in the process, providing food and drink (be that exceptional or mundane) to sustain the builders and looking after young children.

The earthwork builders and their support teams may have participated of their own volition, or it is possible that some or all of the labour was coerced. Slavery appears to have existed in various parts of Iron Age Europe (e.g. Arnold 1988; Taylor 2001), so if the communities of the Yorkshire Wolds included unfree people, then they may well have been forced to build linear earthworks for the benefit of wider society. Even if the team constructing the banks and ditches at Huggate Dykes did not include slaves, some people may have been press-ganged into working by individuals with more authority than them, be authority that political, social, religious or a combination thereof. Social inequality and the denial of agency to some people may have meant that not everyone would have agreed with the physical and social boundaries that the earthworks materialised, and if failing to participate led to social exclusion, then that may have been enough to make dissenting individuals conform and contribute. It is important to remember that linear earthworks represent a variety of personal biographies, and to recognise that people with diminished agency may have experienced these bounded landscapes in vastly different ways than people with the ability to control not only their own lives, but also the lives of others. The coming-together events during which Huggate

Dykes was built—at least three such events have been proposed (Section 6.3.6)—would have provided an opportunity for all members of the community to discuss the meanings of the boundary that the earthwork was intended to formalise, and would have strengthened the ties, both ‘good and ill together’ (Shakespeare 1623: Act IV, Scene 3), which they felt with each other and with the place.

The construction and maintenance of earthworks with entrances through them, like Huggate Dykes, may have been particularly meaningful events, which made clear statements about interpersonal and intercommunity relationships. Thomas (1997), referencing on ethnographic examples from Madagascar and Cunliffe’s work in Hampshire, proposes that the rise of enclosed settlements in Britain during the first millennium BC reflects changing agricultural practices and kinship structures. He draws attention to the entrances through boundaries, arguing that ‘[t]he suggestion that enclosure features were symbols of the kinship division between ‘insiders’ and ‘outsiders’ leads one to interpret these phenomena [the entrances and ‘fronts’ of enclosures] as being ways of emphasizing and of periodically reinforcing that division’ (ibid.: 216). The elaboration some of hillfort entrances (e.g. at Danebury: Cunliffe 1984; Cunliffe and Poole 1991; Maiden Castle: Sharples 2007, 2010) may offer the closest parallel to Entrance 3 at Huggate Dykes (Phases 2-3; see Sections 6.3.4.4 and 6.3.6) in terms of social meaning and conceptual understandings of insiders versus outsiders: this would have been socially cohesive for the earthwork builders, and simultaneously it would have been extremely divisive for individuals or other communities that did not (or were not allowed to) participate in the construction process. Outsiders may not have been allowed to pass through earthwork entrances freely, or at least not without being conscious of their own foreignness. Linear earthworks would have brought cohesion and division in equal measure, depending on the person or community in question.

The memory of construction events and people’s continued interactions with the earthworks would have led to the re-negotiation of their meanings over time. Linear earthworks, like other places, fit within actor networks, and they may have been believed to have agency by the people who built and used them (Fig 7.2). The agency that we might see represented by the archaeological record—the physical world—may not fully reflect the perceived landscapes of the past, where places might have had the ability to be active agents. Thus, earthworks such as Huggate Dykes may have been more than merely impressive; they may have been powerful.

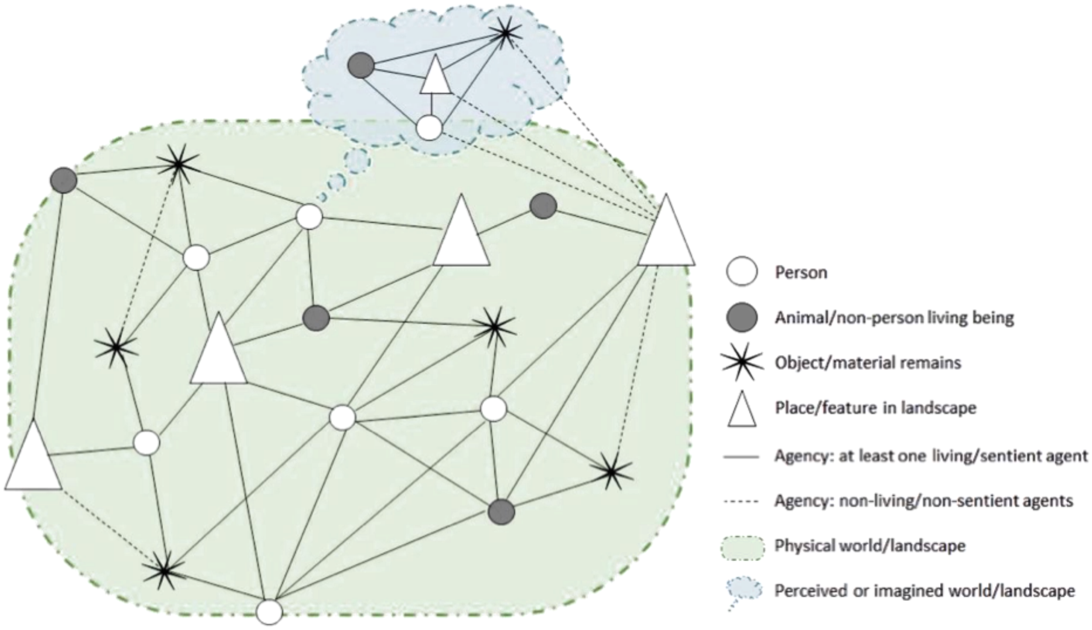


Fig 7.2 Situating the agency of places
(Source: author)

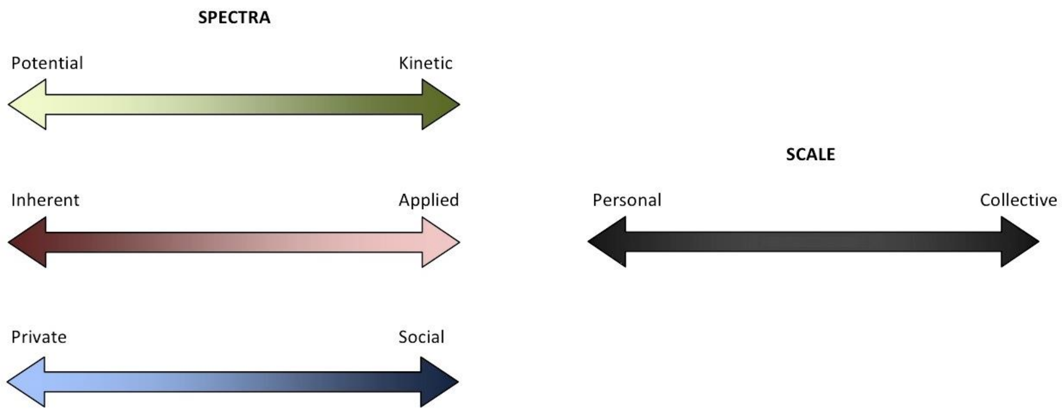


Fig 7.3 Aspects of agency
Agency can be conceived of as multi-spectral and multi-scalar (see Section 2.3.1). The spectra of agency operate together; a single action will have all three dimensions: potential/kinetic, denoting whether or not the agency is being exercised; inherent/applied, denoting whether or not the agency is essential to an agent (i.e. the agent is living and sentient) or given to it by another agent (i.e. the agent is not living or sentient); and private/social, denoting whether or not the agency is enacted in a way that other agents will be able to recognise. The scale of agency ranges from personal (individual or single action) to collective (group or aggregated action; structured agency), and agency tends to work in nested scales, rather than at just one scale. These dimensions are not binary, and agency may fall at any point along each of the spectra and the scale. (Source: author)

The agency of linear earthwork landscapes, like all other agency, is multi-dimensional and multi-scalar (Fig 7.3). These monuments and their natural topographic settings were not sentient therefore did not have inherent agency (as defined in Section 2.3.1), but they could have been given agency by the people who interacted with and experienced them. Being perceived to have power would make them participants in actor networks (Fig 7.2, in the blue thought bubble), and their applied agency could have been just as potent as the inherent agency of people. Where the agency of linear earthworks would fall on the other spectra and scale (Fig 7.3) would depend on the type of interaction occurring between them and other agents; in other words, the potential/kinetic spectrum, the private/social spectrum and the personal/collective scale are all context-specific. If, for example, an Iron Age shepherd and her flock of sheep were to walk along a linear earthwork, which was considered a sacred boundary between the land of the shepherd's community and the wilderness beyond, then crossing the line of the earthwork might be seen as a dangerous act, only to be undertaken on particular occasions or by particular people. The earthwork might actively remind the shepherd of her cosmological beliefs—in similar manner to Western Apache places and place-names, which stalk with stories (Basso 1996: 56-57, 60-61; see Section 2.2)—and prevent her from venturing across its boundary. Therefore, in this situation the earthwork's agency would be more kinetic than potential, as the agency would be in use, rather than stored. As there would be interaction between agents (the earthwork would not be acting alone without the knowledge or presence of the shepherd), this action would fall towards the social side of the private/social spectrum. For the shepherd, the agency of the earthwork might operate at multiple scales. On the one hand, she and her sheep would be alone with the earthwork, without the company of other people, and therefore the interaction would be at a more personal scale (if she did not consider her sheep to be the same type of actors as people, which, of course, could have been the case). On the other hand, the earthwork would bring to mind the other people in the shepherd's community and, potentially, the repercussions that they might face if she should cross the earthwork. If her encounter might be seen to affect other people, then the earthwork's agency could extend to the collective scale. In this example, the linear earthwork forms more of a boundary than a barrier (see Section 7.1.1): the shepherd could cross it if she wanted to, but that would mean transgressing a physical boundary as well a social or spiritual one, possibly to the dismay of her community.

Adding space and time dimensions to these networks of agency, in which linear earthworks were actors, one might trace the movement of the human and animal actors and begin to understand the types of travel that occurred along, across and around linear earthworks. In addition to bounding or enclosing portions of the landscape, linear earthworks also seem to have been designed to direct movement. This might be inferred from their close association with trackways (as at Huggate Dykes; see Chapter 6) and the use of some earthworks as formalised roads (as at Wetwang-Garton Slack; see Chapter 5). As suggested by the least cost modelling presented in Chapter 6, it is likely that different earthworks represent different combinations of agents and their patterns of movement, and therefore no single model can explain the reasons why all of the linear earthworks on the Yorkshire Wolds were built. By writing the biographies of individual earthworks and weaving them together with a discussion of agency and memory, it is possible to build up a nuanced picture of the prehistoric landscape in which they developed, and to explore how different routes and journeys would have brought together people, animals and things.

The next two sections explore how travel and the performed experience of landscape would have helped the builders and users of linear earthworks to understand their world. In order to accomplish this, it is first necessary to address the apparent paradox of boundaries which facilitate travel. Only then is it possible to discuss the meshworks that linear earthworks materialise, and how they would have both reflected and generated the world views of the people moving through the linear earthwork landscapes of the Wolds.

	Boundaries	
permeable	⟷	impermeable
physical	⟷	social/spiritual/ psychological
personal	⟷	societal/communal

Fig 7.4 Aspects of boundaries
(Source: author)

7.1.1 Boundedness and travel: paradox or two sides of the same coin?

The abilities of linear earthworks to bound or enclose and to enable travel are not mutually exclusive. Indeed, boundaries need not be impermeable barriers, although they often are (Fig 7.4, top). Bowden and McOmish (1987) argue that Iron Age enclosed settlements and hillforts were bounded not because they were places that required physical barriers for defence (although they do not dispute the security that hillforts could have offered in times of warfare), but because they needed to be set apart and demarcated as socially or ritually more prestigious than their surroundings. They argue that the ditches around Iron Age settlements 'require explanations beyond the creation of a physical barrier', especially in places where they were allowed to silt up quickly, their 'physical form being of no value' (ibid.: 82). This would suggest an intimate link between physical and social boundaries in later prehistory, and the multiplicity of meanings that physical boundaries materialise—in other words, what they stand for in the minds of the people who build and encounter them—must be considered in the context of linear earthworks. Stoertz (1997: 62) interprets the linear earthworks of the Yorkshire Wolds as not being physical barriers at all, and Giles (2007, 2012: 45-53) draws attention to the fact that their construction and maintenance would have brought together different parts of the community. Boundaries are both inclusive and exclusive: by separating the insiders of a group from outsiders who do not belong, they reinforce commonalities amongst the insiders. Boundaries help to clarify one's place in the world, at least from the perspective of insiders and any outside groups who respect the legitimacy of the boundaries. Giles notes the inseparability of physical boundaries, social boundaries and movement:

> 'By its very nature, the physical boundary causes bodies to pause, to reflect, respect and re-route their original path of movement. In so doing, it changes the nature of that individual's relationship with place, as well as their relations with the people who have constructed that feature. In other words, a physical boundary is also a social boundary...'

(Giles 2012: 47-48)

When they structure patterns of movement, physical boundaries also structure the social worlds in which actors exist. Løveschal (2014: 728) considers linear boundaries as *emerging social categorizations*, which ‘somehow require social embedment, recognition, and acceptance’ in order to function; she emphasises the conceptual processes needed for boundary-making, which are then physically expressed by groups and individuals. Accepting and crossing social, spiritual and psychological boundaries (Fig 7.4, middle) require a type of mobility, and crossing in particular often involves journeying through the physical world. People may travel to seek new work or trade opportunities (potentially transcending the social boundaries of their home communities) or to embark on a religious pilgrimage or quest (again, crossing spiritual and psychological boundaries upon leaving home). These intertwined physical and non-physical journeys may be undertaken by individuals or at a group level (Fig 7.4, bottom), and it is likely that linear earthworks represent boundary-making—and, subsequently, boundary-crossing—at a communal scale.

In addition to demarcating and connecting different places, linear earthworks could be considered places themselves. If places are distinct areas of space with histories and meanings that are experienced by people (Tuan 1975: 152), then linear earthworks function as *links-between-places*—features that connect places together—in their capacity to direct movement to and from hillforts (e.g. Grimthorpe), settlements (e.g. Wetwang-Garton Slack) and water sources (e.g. the bend in the Gypsey Race at Rudston; see Section 6.4). All of these places are points or polygons in space, and the earthworks connect them in a way similar to the lines of Fig 7.2. However, earthworks are more than just lines within a network; they are also actors (the triangles on Fig 7.2), and particular stretches of earthwork may have been given individual place-names and stories that did not apply to other segments. In that sense, then, they are *places-in-their-own-right*—features that are themselves places.

The joining of different lines, in their capacity as *links-between-places*, creates connections not only between the lines, but also amongst all of the distant places from whence and through which they have come, and thus crossroads can become particularly potent *places-in-their-own-right*.

Historically, the confluences of boundaries and roads in Britain and Ireland were regarded as special, although not always in a pleasant way. Irish bog bodies dating to the Iron Age, including Clonycavan Man and Oldcroghan Man, have been found along barony boundaries which may have their origins in prehistory, and the fact that these were watery places in the Iron Age could mean that they were also believed to be liminal boundaries between this world and another (Kelly 2006, 2013: 237). In late medieval England, people who committed suicide were buried under crossroads (Parker Pearson 1999 [2003]: 15), and the corpses of executed criminals were displayed along parish boundaries well into the eighteenth century, sometimes at long-lived gallows sites at the junctions of multiple parishes and roads (Whyte 2003). Although the junctions of linear earthworks may not have been used for such purposes, they may have been similarly regarded as liminal places—especially if the intersecting earthworks at a given junction represented major physical and cosmological boundaries, rather than minor ones.

7.1.2 Agents on the move: performance, meshworks and the making of landscapes

The interconnectedness amongst agents that linear earthworks facilitate, occurring within networks, is made possible by movement. It is by moving through space and between places that actors or agents come into contact with each other and form relationships. Agents move along routes—physical paths across the landscape—and undertake journeys—experienced movement along routes (see Section 6.4). Journeys can be highly individual, and the same route would have been experienced differently by people. For example, a stranger might travel a given route with more trepidation than someone local to the area, and particular routes might have been more challenging, or even impossible to undertake, for the elderly and physically disabled of a community than for their more able-bodied neighbours.

Considering Ingold's categories of movement (2007: 72-103; see Section 2.3.1), would the journeys around Line A, materialised by its earthworks, have constituted wayfaring, transport or both? Earthworks such as Huggate Dykes seem to represent wayfaring, with people and animals relying on the gleaming white banks and ditches to signpost their meandering travels through the landscape. The formalised earthwork-road in Wetwang-Garton Slack is not as clear. At face value, the movement along it might appear more akin to transport, imposed on the landscape in order to move people, animals and vehicles from one side of the valley to the other. However, because it aligns on Early Bronze Age and Neolithic barrows and branches off from a wayfaring-type earthwork, the Wetwang-Garton earthwork may be the monumentalisation of a widely used, earlier wayfaring route. Indeed, many of the linear earthworks of the Yorkshire Wolds probably have their roots in patterns of movement that were already ancient by the time of their construction in later prehistory. Thus, they fossilise the meshworks and networks of not only the Late Bronze Age and Iron Age, but also potentially of other periods of prehistory. The stories of Huggate Dykes and Wetwang-Garton Slack would have been intertwined with those of humans, animals, things and other places on the Yorkshire Wolds. Memory and history would have played important roles in the creation and modification of linear earthworks, and thus these monuments would have had the power to connect people not only across space, but also across time.

Whereas routes can be reduced to lines on a map, journeys are less tangible archaeologically due to their performative nature. Tracks and roads are the material representations of routes and the journeys made along them, and they both reflect and produce the social worlds of the people who build and use them (see, for example, Snead et al. 2009). As people journey, they reflexively interact with the landscape, place-making as they move. The processes of boundary-making and boundary-marking can be particularly performative, as boundaries need to be recognised in order to be upheld. Giles describes the role that the linear earthworks of the Yorkshire Wolds played in the maintenance of parish (2012: 40-41) and farm (ibid.: 56-57) boundaries during the post-medieval period. Prior to and even following the popularisation of maps, communities needed to agree where boundaries were located, so the semi-religious, semi-secular boundary-marking practice of Beating the Bounds—also called Perambulation, or Rammalation, as it was known in the East Riding of Yorkshire (Burne 1916: 193)—was employed during the seventeenth to nineteenth centuries (Tratman 1931, in response to Wright 1929 and Burne 1916; Giles 2012: 40-41). Possibly derived from Early

Medieval methods of marking out religious boundaries (Tratman 1931; Giles 2012: 40), Beating the Bounds involved the periodic walking or riding around the circuit of a parish boundary by a community; amidst prayer, singing and feasting on cakes, important boundary markers were beaten with staffs or rods, and children were subjected to similar treatment so that they would remember the features and their importance (ibid.). Knowing exactly where boundaries were located could help to avoid disputes over rights to grazing land or water, which could last for generations and disrupt relationships amongst families (ibid.: 56-57). This performance of boundary-marking, corporeally manifested through walking and beating, would serve to reinforce community members' sense of world order: that they belonged to a particular place, and that this place had physical boundaries on the ground, which were legitimised by folklore, religious beliefs and secular administration.

A similar example of performative boundary-marking can be found in the Yaqui (Yoeme) practice of the Singing of the Boundary, which reinforces the location of the Holy Dividing Line, the boundary which the Yaqui believe to have been created by God in order to separate their homeland—which is tied to several magical worlds—from the land of other people (Sheridan 1996: 40). The boundary's extent is marked by a combination of natural features and crosses (Bufkin and Burckhalter 1992), and its maintenance is essential to Yaqui cosmology and identity. Yaqui myths maintain that it was marked out in 1414 by Yaqui prophets and a band of angels, who walked along it singing (Sheridan 1996: 40), and that its location and sanctity were made clear to Europeans in 1533 when the Yaqui first encountered them (Evers and Molina 1992; Sheridan 1996: 40). Spicer (1947: 5-6) argues that the origins of the Singing of the Boundary story lie not in the fifteenth or sixteenth centuries, but rather in the nineteenth century. Its modern incarnation (see Evers and Molina 1992: 9-15) has been influenced by the political situation of the Yaqui in the 1930s and '40s, when their homeland was partly restored to them by the Mexican government, following decades of conflict and forcible removal to other parts of Mexico (ibid.: 17-18). However ancient or modern the boundary and its associated myths are, the acts of walking and singing serve to re-inscribe the Holy Dividing Line in the memories of Yaqui and non-Yaqui people, simultaneously defending the Yaqui claim to the bounded land and expressing Yaqui cultural and religious identity.

Although it is impossible to know if the people of the Yorkshire Wolds engaged in formalised boundary-marking performances like Beating the Bounds or the Singing of the Boundary along linear earthworks, the initial earthwork construction events—boundary-making—would have been performative, probably with particular people organising the labour force, the majority of the community digging the ditches and still other people organising auxiliary services, such as food preparation and childcare (see Table 7.1, Section 7.1, above). As the various actors in this construction process set about completing their respective tasks, they would have talked about why they were building such a monumental boundary marker, and they may have told folk stories and sung songs. The finished earthwork would have served as the material evidence of their performance, and its visibility would have allowed people to return to the place and remember the construction process.

In addition to moving along boundaries, later prehistoric people would have made journeys across and around them. Special journeys, such as pilgrimages or trading expeditions, could have brought together distant communities, and linear earthworks would have structured the ways in which they interacted and understood their places in the world. Even everyday movement along, around and across linear earthworks could have been perceived as socially or culturally important. The O'odham people of the American Southwest, whose traditional homelands span the US-Mexico border in Arizona and Sonora, sing songs about mythological journeys which correspond to physical trails on the ground, and thus performing these songs enables them to move through their landscape not only without getting lost—because the songs tell them where they are going and how to get there—but also in a culturally-relevant way (Darling 2009). The journeys described in the O'odham's Oriole songs, for example, (ibid.: 69-72) describe trails leading to sacred mountains and salt flats, some of which appear to have been in use since the eleventh to fifteenth centuries AD (ibid.: 76). Additionally, the O'odham use the same word, *himdag*, to mean 'tradition/heritage' and 'to walk a (good) path', and their concept of walking a good path applies to both physical journeys and to life (ibid: 65). Movement through the O'odham landscape is intimately connected with the biographies of people and memory, potentially through deep time. Similar ways of journeying may have existed on the prehistoric Yorkshire Wolds, with patterns of movement potentially recorded orally through stories and songs, and their material expressions—i.e. trackways and earthworks—reflecting long-standing beliefs about the land and the conceptual boundaries across it (see also Section 6.4).

Boundary-making invariable leads to boundary-crossing, and travel would have taken place both across and beyond the Wolds in later prehistory. Travel could be undertaken on foot, on horseback, on a chariot or by boat, and the people of the Wolds certainly had connections with the Continent by Middle Iron Age, even if most people never physically travelled there (see Section 1.4.1 and Giles 2012: 225-229). Not all such instances of boundary-crossing may have been welcomed, either by the crossers-over or the crossed-into. When people and animals journey where they are not supposed to go, they may transgress not only physical boundaries, but also social ones (Sections 7.1 and 7.1.1). This may be done unintentionally (e.g. when people are not local to a place and therefore are not familiar with its social rules) or on purpose (e.g. to incite warfare), and may happen at either the individual or collective scale. The raiding of livestock, portable objects and people, for example, may have contributed to the construction of monumental landscape divisions in later prehistory. Cattle raiding features in the medieval Ulster Cycle (Waddell 2010: 318-319), and Raftery (1994: 125) posits that it was 'undoubtedly endemic' in the Irish Iron Age, constituting an important part of the economy which was also laden with social and mythological meanings. Mortimer (1905: 377) proposes that the linear earthworks of the Wolds were intended to protect cattle from 'the sudden incursions of freebooters', and Bradley (1972: 195) argues that although linear earthworks may not have been defensive, per se, 'the threat of raiding must have blurred any rigid division between a protective and a truly enclosing earthwork'. In the prevention of raiding, linear earthworks could have acted as social or political deterrents, rather than physical barriers.

Raiding itself may be a codified practice, with etiquette or rules of behaviour governing where people are allowed to raid, and what they may do when they arrive at their destination. Prior to colonisation and forced migration to reservations in the nineteenth century, the Western Apache economy depended on a combination of trade and raiding for the procurement of livestock for transportation and meat (Goodwin 1935: 61). As the Western Apache did not have a tradition of raising livestock, the traded and raided domesticated meat formed a small part of their diet, which was dominated by wild plants, wild meat and farmed crops (ibid.: 61, 63). Raiding was considered acceptable only when perpetrated against enemies, particularly Mexicans and the Navajo; ethnographic fieldwork conducted by Grenville Goodwin during the 1930s reveals some of the motivations behind the practice:

> 'Our people used to go on raids down into Mexico to bring back horses, mules, burros [donkeys], and cattle. This is the way we used to take the property of the Mexicans and make a living off them... We never used to travel around with the Mexicans because we were always fighting with them. This way, when we fought with them, some of us would get killed and some of them would get killed. It was hard living in those days, and sometimes a raiding party would get nothing in Mexico and come back [to Arizona] empty-handed.'
>
> (Palmer Valor, quoted in Goodwin 1971: 43)

In addition to raiding to compensate for economic hardship, or 'hard living', Valor explains that the Western Apache and Mexicans were constantly warring, with casualties on both sides (ibid.: 45-46). Therefore, taking Mexican livestock back to Arizona was seen as a legitimate act, made possible by the general level of conflict which existed amongst the Apache and surrounding peoples. Valor also describes the landscapes and seascape of Mexico, which contrast with the landscapes of his home. Whilst raiding, Valor and his fellow travellers once reached the Gulf of Mexico, where they encountered seashells; touching these was forbidden, so the raiders left them alone and prayed to the water for a safe journey home (ibid.: 45). Seashells would not have been common in the Western Apache landscapes of Arizona—a region which has no access to the sea—and thus this taboo would not need to be invoked on a regular basis, but rather on special occasions, such as during raids and trading exchanges. The crossing of a physical boundary facilitated the potential crossing of a religious or cosmological boundary, and it was through the prohibition of particular behaviours that such a transgression could be avoided.

Linear earthworks may have been associated with raiding and conflict, as much as they could have represented communal identity and cosmology. Human remains found in the unfinished linear ditch at Tormarton in Gloucestershire have been interpreted as evidence of conflict during the boundary's construction (Osgood 2005; see also Halkon 2013: 58). Giles (2012: 104-108, drawing extensively on King 2010) argues that inter-personal violence was rare in Iron Age East Yorkshire, and that most instances of violent trauma were not fatal. She suggests that there may have been 'an elaborate code of honour' governing warfare in East Yorkshire (Giles 2012: 108), which would have been related to wider beliefs about society and personhood (i.e. who was an enemy, and when or under what circumstances it would have been acceptable to fight). King (2010: 236) concludes that the sharp force traumatic injuries found at Wetwang Slack could indicate 'ritualized combat, competition or some type of duelling ', where the use of particular weapons, such as swords, was highly performative (ibid.: 236-240). Warfare also raises the possibility of slave raiding and the taking of war captives, as well as livestock raiding and the looting of portable objects (see Arnold 1988). King suggests that some of the human remains from Iron Age Hampshire may be those of slaves or war captives (2010: 241-243), although whether or not those social categories—and the set of interpersonal behaviours that they entail—existed in Yorkshire is unclear.

The social categories which structured later prehistoric society on the Yorkshire Wolds may have affected the ways in which individual people moved through the landscape, and, consequently, how they interacted with linear earthworks. Age, status and gender may have governed the types of behaviours that people engaged in, and therefore not all people may have been allowed to undertake particular journeys. The herding of livestock, for example, may or may not have been a gendered experience. In Navajo (Diné) society, both women and men can own sheep, but women have traditionally controlled a higher proportion of their family's flock (Weisiger 2009: 81).

Consequently, women have also had the power to negotiate access to the best grazing land, a concept which is at odds with the patriarchal beliefs of some of the early twentieth-century ethnographers who studied Navajo pastoralism:

> '...[N]or did they comprehend the entangled relationships between Navajo women and their stock. They did not recognize that the various strands of women's lives—their stock ownership, their work as weavers, their secure position within matrilocal communities, and their *unmediated access to grazing lands*—gave Diné women not only power over their own lives, but also power to affect community decisions. Like the individual fibers of a braided cord, each of these strands reinforced the other, and Navajo women would not allow them to unravel easily.'
>
> (Weisiger 2009: 83-84, emphasis added)

The value placed on the women's economic and social contributions to their communities is reflected in their agency, and women's access to land fits within the wider context of Navajo cosmology, in which the world is composed of male:female gendered pairs working in harmony, mediated by a third gender, *nádleeh*, that combines male and female qualities in order to bring the paired genders together (ibid.: 84). The landscapes in which the Navajo drive their sheep are gendered, with every element classified and complementing another element of the opposite gender; for example, the torrential summer monsoon is said to be male rain, whereas gentler spring showers are female rain (ibid.). Navajo sheep farming reveals that even in a society where all people have access to livestock and wield agency, gendered beliefs about the world may lead to differential access to particular tracts of land, negotiated by particular members of the community by virtue of the social categories into which they fit. Therefore, movement through a landscape is intimately linked to the personhood of the traveller, and journeys made by different people will be conditioned by the variation that may exist amongst their experiences of the world.

Bounded movement across the Yorkshire Wolds would have occurred within the context of the wider world, from the construction of the linear earthworks in prehistory, through to their later lives in the medieval and post-medieval periods. The movement of people, animals and objects through organised landscapes—facilitated by linear earthworks—would have led to the exchange of ideas and cosmologies, forcing people to confront and renegotiate their beliefs about how they should inhabit the land. The linear earthworks of the Wolds emerged when communities began to formalise and monumentalise divisions within their landscapes, and the earthworks' persistence through deep time as useful, meaningful boundary-routeways has allowed many of them to survive into the present day.

7.2 Bounded worlds

Boundaries appear to have played a major role in the creation and maintenance of cosmologies across later prehistoric Britain and Ireland. Throughout the Neolithic and Bronze Age—and, to an extent, as far back as the Mesolithic (see Section 4.1.1)—people monumentalised places, and by the Late Bronze Age, many of these monuments were probably being used to denote conceptual boundaries and routeways within their wider landscapes (see, for example, Section 4.2.3 and Chapter 6). Many linear earthworks were probably constructed around the same time as hillforts (Section 4.1.2), and the spatial associations between these two types of monumental boundaries (e.g. at Danebury; Cunliffe 1984; Cunliffe and Poole 1991) suggest that they relate to an overarching need to divide up the world into distinct regions, territories or parcels of land. These landscape divisions are unlikely to have related to purely political or economic units; they would have reflected and reinforced the interwoven identities and social worlds of different communities, drawing together people, animals, objects and other places (see Section 7.1). Earthworks may be considered *links-between-places* and *places-in-their-own-right*, both connecting and being connected.

This project has attempted to demonstrate that prehistoric routes and journeys across the Wolds can be modelled through the use of GIS (see Section 6.4). However, mapping historically factual journeys is complicated, as agents, both human and animal, are capable of making choices, which may not be reflected by computer modelling. Tracing a particular agent's movement across a landscape requires faith that they did not deviate from the prescribed trail or trails which were designed to direct them, and even if historically factual movement can be mapped, it is even more difficult to experience prehistoric journeys. Garrow (2007) describes how difficult it is to approach Neolithic journeys from a phenomenological perspective, in the absence of monumentalised routeways. Although the linear earthworks of the Wolds offer more visible, tangible traces of later prehistoric movement, their multi-phased, deep-time character means that the routes and journeys that they reveal archaeologically are most likely cumulative and at a collective scale. In order to tell the stories of individual journeys, techniques such as narrative story-telling and art (e.g. creative writing) may offer solutions. By reconstructing the linear earthwork landscapes of the Wolds—from their beginnings amidst earlier prehistoric funerary monuments to their heyday amidst later prehistoric settlements and cemeteries, and then to their re-use as medieval and post-medieval administrative boundaries—and by asking how individual people and animals may have fit within that world, we can begin to imagine the journeys that those individuals *could have made*. By looking to historic and ethnographic examples of performative movement, boundary-marking and boundary-crossing, the stories that we tell about linear earthworks and the journeys related to them are enriched, and these stories improve further still when situated within the wider context of later prehistoric Britain and Ireland.

In addition to being monumental construction projects and useful trackways, linear earthworks are material representations of how later prehistoric people saw the world around them, and how they lived within it. In the BBC Arts and BFI film *Hockney* (2014), the artist David Hockney proposes that ‘there is possibly a great connection between the way we depict space and the way we behave in it’. Linear earthworks are reflexive monuments, both depicting and conditioning the ways that people moved through and experienced landscapes. They offer us tangible evidence of the boundary-making practices and patterns of movement that took place on the Yorkshire Wolds from prehistory onwards, and remind us that no archaeological landscape can truly be understood if divorced from the people and animals who inhabited it.

Chapter 8.

Lines across the land: future work and final remarks

> *The special fascination which the linear earthwork has for the field worker is here revealed. The survey of a work of this class vividly brings home to the student a forgotten England...*
>
> *Fox 1929: 138*

This project set out to write a biography of the linear earthwork landscapes of the later prehistoric Yorkshire Wolds. Drawing on theories of agency and place-making, and using GIS (Chapters 2-4), it has drawn together the life histories of two sites, Wetwang-Garton Slack (Chapter 5) and Huggate Dykes (Chapter 6), and explored how the people who created them interacted with earlier monuments and the natural landscape. The biographies of these two case study earthworks proved to have been complicated, multi-phased and inextricably connected with those of the people and animals who moved around, along and across them. Tracing these movements may help us to understand the reasons why the earthworks were constructed in particular locations, rather than others, and why some earthworks (e.g. Huggate Dykes and the rest of its alignment, Line A) persisted as useful, meaningful boundary-routeways well into the post-medieval period (Chapters 6-7). Finally, the project has tried to engage with linear earthwork landscapes in a way that affords them agency in the present. Experiential and artistic approaches to landscape (e.g. Sections 6.3.2 and 6.3.5) have complemented more scientific techniques (e.g. Chapter 4 and Section 6.3.4), in an attempt to recognise the ability of ancient places, in their modern incarnations as we see them today, to shape the narratives which we tell about the past.

The project has highlighted several areas of future research which could potentially refine the stories of Wetwang-Garton Slack and Huggate Dykes. The frustrating lack of radiocarbon dates for the organic material found within the Wetwang-Garton Slack earthwork ditches (including human skeletal material held by Hull and East Riding Museum) could not be addressed within the remit of this study, but future phases of the Wetwang-Garton Slack Archive Project might offer the opportunity to resolve the issue. The absolute dating of the burials in the bases of the ditches could possibly reveal whether this was a long-lived or occasionally recurring tradition, or if the burials are more likely to represent a single event in the life history of the monument (i.e. a transitional stage between open and infilled ditches; see Section 5.3.1.2). This would complement the existing chronological model for the site (Jay et al. 2012), which has focussed on burials *not* found within the fills of the earthwork ditches. Absolute dating at Huggate Dykes would also be useful, potentially placing the phasing model (Sections 6.3.4.4 and 6.3.6) in the correct temporal context. This would require a new programme of excavation; targeting the upstanding banks and ditches in the Western Zone would probably provide the best stratigraphic and dating evidence, but would be more disruptive to the monument than excavation in the truncated Eastern Zone, which is still under plough. In addition to the radiocarbon dating of organic material, which might or might not be found, OSL could provide clues as to the dates of the phases. Additional geophysical fieldwork at Huggate Dykes should first focus on the remaining part of the core area in the Eastern Zone, which had to be abandoned due to equipment failure and difficulties obtaining landowner permission (Section 6.3.4), and subsequently could expand to cover the surrounding fields to the north and south of the earthwork. Detailed topographic survey, photogrammetry, terrestrial laser scanning and LiDAR could all be undertaken to generate a 3D model of the surviving banks and ditches, which could then be used to reconstruct how the monument would have looked in its heyday, as well as to calculate the exact volume of chalk that would have been moved during the three phases of construction.

Further experiential and experimental work could provide more insight into the patterns of movement that occurred in linear earthwork landscapes. The least cost models (Section 6.4) could be ground-truthed through experimental journeys with livestock. The experiential fieldwork conducted by this project hoped to imagine the landscapes around Huggate Dykes from a non-human perspective (Section 6.3.5), and the least cost modelling (Section 6.4) attempted to predict whether or not the needs of animals were considered during the construction of particular linear earthworks. Walking along a linear earthwork, such as Line A, with GPS-tracked livestock could reveal how the earthworks might have related to the animal geography (Section 3.1.3) of the later prehistoric Wolds. Finally, adopting a formal programme of public outreach and an artist-in-residence approach during future projects on the linear earthworks of the Yorkshire Wolds could help to keep these monuments relevant in contemporary society. By adopting creative ways of telling stories about the past (e.g. Section 6.3.5), and by including members of the public in discussions about the development of linear earthwork landscapes throughout and beyond later prehistory, we can make the biographies of these landscapes—what Fox (1929: 138) calls ‘a forgotten England’—more accessible to non-archaeologists.

By writing a biography of a particular linear earthwork landscape on the Yorkshire Wolds, this project has demonstrated the value of studying landscapes with nested scales of analysis, from the regional, macro-scale level facilitated by GIS, down to the micro-scale level of a particular place. Without an intimate assessment of individual places, it is difficult to see how they might fit within actor-networks; in other words, the macro-scale may allow you to see a network in its entirety, but the nature of the connections amongst places and other actors cannot be understood without a detailed picture of how those places were created, maintained and experienced. The research presented in the previous chapters contributes to a wider discourse on British later prehistory, which requires constant refining and updating as new stories are uncovered and old ones are reinterpreted. Fundamentally, though, this project tells a story merely for the story’s sake—because it deserves to be told.

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Databases and archives consulted for primary resources

This project relies on primary sources from the Wetwang/Garton Slack Project archive, as well as on historic Ordnance Survey maps. OS maps and data were obtained from Edina Digimap and the National Library of Scotland. The University of Bradford currently holds the Wetwang/Garton Slack Project archive in both paper and digital formats; digital copies of archival materials are to be made public and open access through the Archaeology Data Service in the near future, ahead of a formal publication. Chapter 6 refers to the poetry of Jacquetta Hawkes, which is also curated by the University of Bradford, and to the art of Richard Long, Rik Hammond and Miranda Creswell; websites and repositories for these artists are given below.

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Appendices (on Disc)

A GIS and spatial data

- A1 Master GIS: layer packages
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B Dating evidence

C Earthwork classifications

D Geophysical report for Huggate Dykes

E Experiential fieldwork and creative approaches to landscape

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